HITACHI SERVICE MANUAL

TY No. 445 EGF

HA-37/57
(US,CS,BS,SA,ES,VS,KS,ZS,EW)

36187

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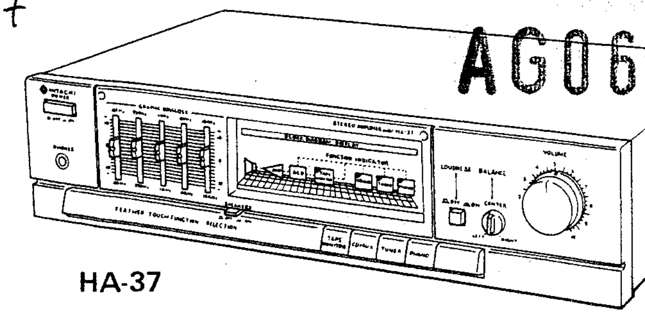
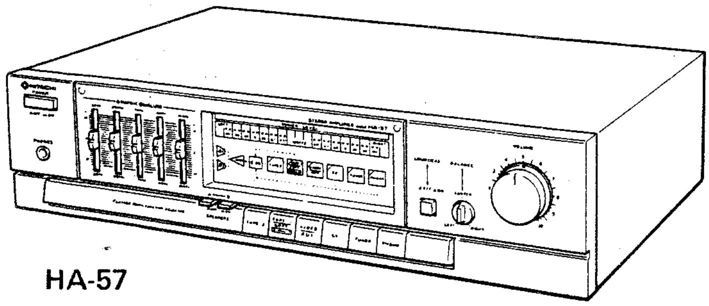


HA-37



HA-57

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SAFETY PRECAUTION

The following precautions should be observed when servicing.

1. Since many parts in the unit have special safely related characteristics, always use genuine Hitachi's replacement parts. Especially critical parts in the power circuit block should not be replaced with other makers. Critical parts are marked with ⚠ in the circuit diagram and printed wiring board.
2. Before returning a repaired unit to the customer, the service technician must thoroughly test the unit to ascertain that it is completely safe to operate without danger of electrical shock.

SICHERHEITSMASSNAHMEN

Bei Wartungsarbeiten sind die folgenden Sicherheitsmaßnahmen zu beachten :

1. Da verschiedene Teile dieses Gerätes Sicherheitsfunktionen aufweisen, nur Original-Hitachi-Ersatzteile verwenden. Kritische Teile im Netzteil sollten nicht durch ähnliche Teile anderer Hersteller ersetzt werden. Alle kritischen Teile sind im Schaltplan und im Diagramm der Schaltplantinen mit dem Symbol ⚠ gekennzeichnet.
2. Vor der Auslieferung eines reparierten Gerätes an den Kunden muß der Wartungstechniker das Gerät einer gründlichen Prüfung unterziehen, um sicherzustellen, daß sicherer Betrieb ohne die Gefahr von elektrischen Schlägen gewährleistet ist.

PRÉCAUTIONS DE SÉCURITÉ

Les précautions suivantes doivent être observées chaque fois qu'une réparation doit être faite.

1. Etant donné que de nombreux composants de l'appareil possèdent des caractéristiques relatives à la sécurité, utiliser uniquement des pièces de rechange d'origine Hitachi pour effectuer un remplacement. Ceci se rapporte notamment aux piéces critiques du bloc d'alimentation qui ne doivent en aucun cas être remplacées par celles d'autres fabricants. Les piéces critiques sont accompagnés du symbole ⚠ dans le schéma de montage et sur le schéma de plaque de câblage.
2. Avant de retourner l'appareil réparé au client le technicien doit procéder à un essai complet pour s'assurer qu'il ne présente aucun danger de chocs électriques.

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT.

STEREO AMPLIFIER

March 1985 TOYOKAWA WORKS

SPECIFICATIONS

Power output (Both channels driven)	HA-57:	100 Watts* per channel, min. RMS, at 8 ohms from 20 Hz to 20 kHz, with no more than 0.1% total harmonic distortion. 100 W/ch + 100 W/ch (8 ohms, 1 kHz, T.H.D. 0.1% I.E.C.) 100 W/ch + 100 W/ch (8 ohms, 20 kHz, T.H.D. 0.1%)
	HA-37:	50 Watts* per channel, min. RMS, at 8 ohms from 40 Hz to 20 kHz, with no more than 0.5% total hormonic distortion. 53 W/ch + 53 W/ch (8 ohms, 1 kHz, T.H.D. 0.5% I.E.C.) 53 W/ch + 53 W/ch (8 ohms, 40 Hz – 20 kHz, T.H.D. 0.5%)
Harmonic distortion (8 ohms) (at 1/2 rated output)		0.1% (HA-57) 0.2% (HA-37)
Intermodulation distortion (at 1/2 rated output)		0.1% (HA-57) 0.2% (HA-37)
Frequency characteristics		
PHONO		20 Hz – 20 kHz, RIAA ±0.5 dB (HA-57) 30 Hz – 20 kHz, RIAA ±0.5dB (HA-37)
CD, TUNER, AUX TAPE 1,2		10 Hz – 40 kHz (±3 dB)
Input sensitivity/Impedance		
PHONO		3 mV/47 k-ohms
CD, TUNER, AUX 1,2,		180 mV/42 k-ohms
TAPE PLAY 1,2		180 mV/42 k-ohms
Output level		
TAPE REC OUT 1,2		180 mV/1 k-ohms
Phono overload level (at 1 kHz T.H.D. 0.1%)		120 mV (HA-57) . 140 mV (HA-37)
Signal-to-noise-ratio (IHF, A network)		
PHONO		72 dB
CD, TUNER, AUX-1,2		90 dB
TAPE 1,2		90 dB
Damping factor		20 (1 kHz, 8 ohms) (HA-57) 30 (1 kHz, 8 ohms) (HA-37)
Graphic Equalizer		±8 dB (63 Hz, 250 Hz 1 kHz, 4 kHz, 16 kHz)
Loudness control		+6 dB (100 Hz) +3 dB (10 kHz) (HA-57 only)
Power supply		AC 120 V, 60 Hz (US, CS) ~240 V, 50 Hz (BS, SA) ~220 V, 50 Hz (ES, VS, KS, ZS) ~240 V, 220 V, 120 V, 50/60 Hz (EW)
Power consumption		500 W (at rated output) (~240V) (HA-57) 300 W (at 1/3 rated output) (AC 120 V) (HA-57) 270 W (at rated output) (~240V) (HA-37) 170 W (at 1/3 rated output) (AC 120 V)(HA-37)
Dimensions		435(W) X 110(H) X 280(D) mm (HA-57) 435(W) X 110(H) X 280(D) mm (HA-37)
Weight		7.6 kg (HA-57) 5.4 kg (HA-37)

* Measured pursuant to the Federal Trade Commission's Trade Regulation Rule on Power Output Claims for Amplifiers.

TECNISCHE DATEN

Ausgangsleistung (2-Kanalbetrieb)	HA-57:	100 Watt/Kanal min. RMS bei 8 Ohms von 20 Hz bis 20 kHz, mit 0.1% Klirr 100 Watt/ Kanal + 100 Watt/Kanal (8 Ohms, 1 kHz, T.H.D. 0.1% I.E.C.) 100 Watt/Kanal + 100 Watt/Kanal (8 Ohm, 20 Hz – 20 kHz, T.H.D. 0.1% Klirr)
	HA-37:	50 Watt/Kanal min. RMS bei 8 Ohms von 40 Hz bis 20 kHz, mit 0.5% Klirr 53 Watt/Kanal + 53 Watt/Kanal (8 Ohms, 1 kHz, T.H.D. 0.5% I.E.C.) 53 Watt/Kanal + 53 Watt/Kanal (8 Ohm, 40 Hz – 20 kHz, T.H.D. 0.5% Klirr)
Klirrfaktor (8 Ohms) (be halber Nennleistung)		0.1% (HA-57) 0.2% (HA-37)
Intermodulationsverzerrung (bei halber Nennleistung)		0.1% (HA-57) 0.2% (HA-37)
Frequenzcharakteristik		
PHONO		20 Hz – 20 kHz, RIAA-Kennlinie ±0.5 dB (HA-57) 30 Hz – 20 kHz, RIAA-Kennlinie ±0.5 dB (HA-37)
CD, TUNER, AUX TAPE 1,2		10 Hz – 40 kHz (±3 dB)
Eingangsempfindlichkeit/ Impedanz		
PHONO		3 mV/47 kOhms
CD, TUNER, AUX		180 mV/42 kOhms
TAPE PLAY 1,2		180 mV/42 kOhms
Ausgangspegel		
TAPE REC OUT 1,2		180 mV/1 kOhm
Phonoüberlastungspegel (bei 1 kHz, 0.1% Killer)		120 mV (HA-57) . 140 mV (HA-37)
Geräuschspannungsabstand (IHF, A-Nets)		
PHONO		72 dB
CD, TUNER, AUX-1,2		90 dB
TPAE 1,2		90 dB
Dampfungsfaktor		20 (1 kHz, 8 Ohms) (HA-57) 30 (1 kHz, 8 Ohms) (HA-37)
Graphic Equalizer		±8 dB (63 Hz, 250 Hz, 1 kHz, 4 kHz, 16 kHz)
Gehörrichtige Lautstärkekorrektur		+6 dB (100 Hz) +3 dB (10 kHz) (HA-57 only)
Netzspannung		Net 120 V, 60 Hz (US, CS) ~240 V, 50 Hz (BS, SA) ~220 V, 50 Hz (ES, VS, KS, ZS) ~240 V, 220 V, 120 V, 50/60 Hz (EW)
Leistungsaufnahme		500 W (bei Nennleistung) (Nets 240 V) (HA-57) 300 W (bei 1/3 Nennleistung) (Net 120 V) (HA-57) 270 W (bei Nennleistung) (Nets 240 V) (HA-37) 170 W (bei 1/3 Nennleistung) (Nets 120 V) (HA-37)
Abmessungen		435(W) X 110(H) X 280(T) mm (HA-57) 435(W) X 110(H) X 280(T) mm (HA-37)
Gewicht		7.6 kg (HA-57) 5.4 kg (HA-37)

Änderungen der Konstruktion und technischen Daten bleiben im Sinne der ständigen Verbesserung vorbehalten.

CARACTERISTIQES TECHNIQUES

Puissance de sortie (deux canaux)	HA-57:	100 Watt per canal, min: RMS à 8 ohms de 20 Hz à 20 kHz avec une distortion harmonique totale inférieure à 0.1% 100 W/canal + 100 W/canal (8 ohms, 1 kHz, D.H.T. 0.1% I.E.C.) 100 W/canal + 100 W/canal (8 ohms, 20 Hz – 20 kHz, D.H.T. 0.1%)
	HA37:	50 Watt per canal, min, RMS, à 8 ohms de 40 Hz to 20 kHz avec une distortion harmonique totale inférieure à 0.5% 53W/canal + 53 W/ canal (8 ohms, 1 kHz, D.H.T. 0.5% I.E.C.) 53W/canal + 53W/canal (8 ohms, 40 Hz – 20 kHz, D.H.T. 0.5%)

Distorsion harmonique (8 ohms)	
(à 1/2 de sortie nominale)	0.1% (HA-57) 0.2% (HA-37)
Distorsion d'intermodulation	
(à 1/2 de sortie nominale)	0.1% (HA-57) 0.2% (HA-37)
Caractéristiques de fréquence	
PHONO	20 Hz à 20 kHz, RIAA ±0.5 dB (HA-57) 30 Hz à 20 kHz, RIAA ±0.5 dB (HA-37)
CD, TUNER, AUX TAPE 1,2	10 Hz à 40 kHz (±3 dB)
Sensibilité d'entrée/Impédance	
PHONO	3 mV/47 kohms
CD, TUNER, AUX	180 mV/42 kohms
TAPE PLAY 1,2	180 mV/42 kohms
Niveau de sortie	
TPAE REC OUT 1,2	180 mV/ 1 khoms
Niveau de surcharge de table de lecture (à 1 kHz, D.H.T. 0.1%)	120 mV (HA-57) . 140 mV (HA-37)
Rapport signal/bruit (IHF, réseau A)	
PHONO	72 dB
CD, TUNER, AUX 1,2	90 dB
TAPE 1,2	90 dB
Facteur d'amortissement	20 (1 kHz, 8 ohms) (HA-57) . 30 (1 kHz, 8 ohms) (HA-37)
Equaliseur grahique Réglage des aigues	±8 dB (63 Hz, 250 Hz, 1 kHz, 4 kHz, 16 kHz)
Correction physiologique	+ 6 dB (100 Hz) + 3 dB (10 kHz) (HA-57 only)
Alimentation	CA120 V, 60 Hz (US, CS) ~240 V, 50 Hz (BS, SA) ~220 V, 50 Hz (ES, VS, KS, ZS) ~240 V, 220 V, 120 V, 50/60 Hz (EW)
Consommation	500 W (à la puissance nominale) (CA240 V) (HA-57) 300 W (à 1/3 de la puissance) (CA120 V) (HA-57) 270 W (à la puissance nominale) (CA240 V) (HA-37) 170 W (à 1/3 de la puissance) (CA120 V) (HA-37)
Dimensions	435(L) X 110(H) X 280(P) mm (HA-57) 435(L) X 110(H) X 280(D) mm (HA-37
Poids	7.6 kg (HA-57) . 5.4 kg (HA-37)

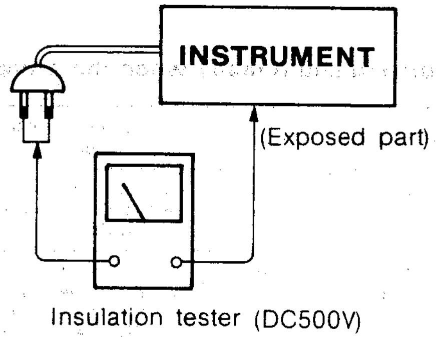
Les caractéristiques techniques et la présentation peuvent être modifiées sans préavis pur des raisons d'amélioration.

Check that exposed parts are acceptably insulated from the supply circuit before returning the instrument repaired to the customer.

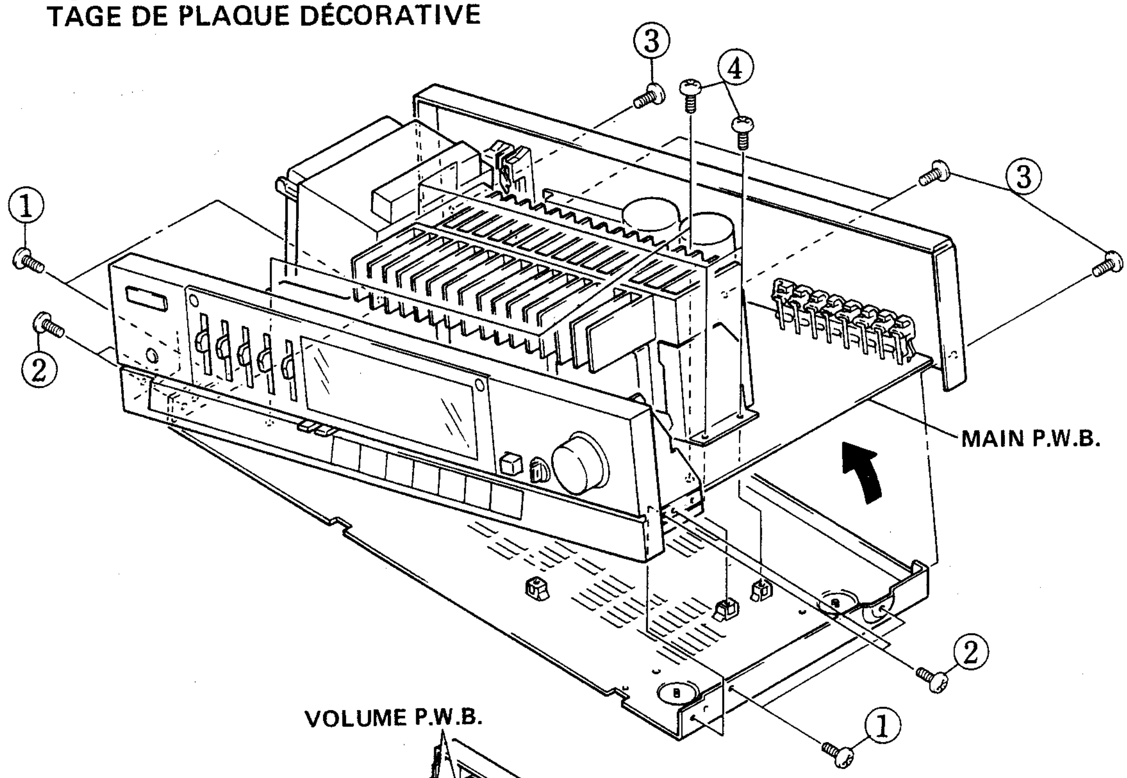
- **Checking method**

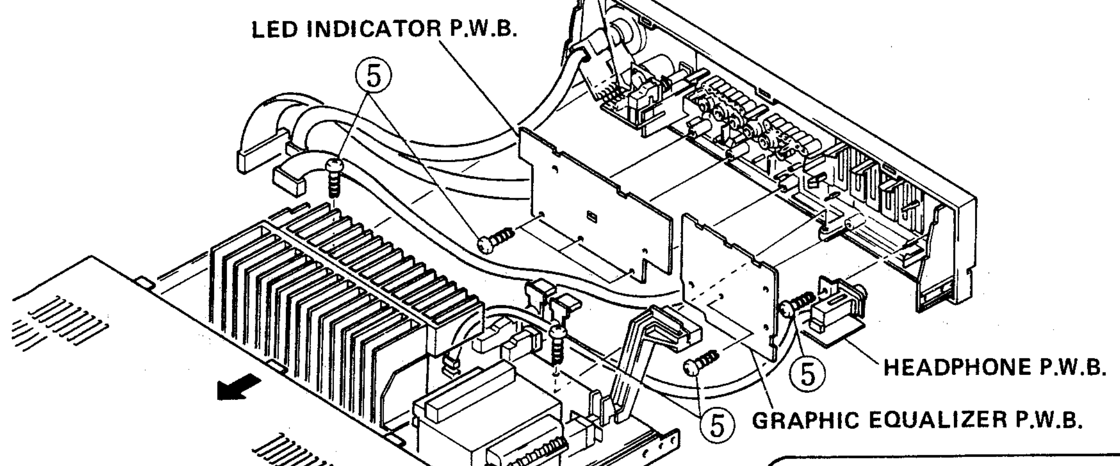
  Power switch is set to ON.

  Next, measure the resistance value between the both poles of attachment cup (Power supply plug) and the exposed parts (Parts such as Ground terminal, Knob, Cover, etc. where the customer is easy to touch) and check that the resistance value is 500 kohms or more.

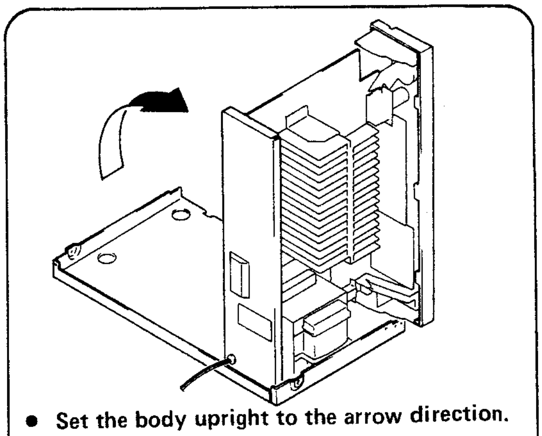


CIRCUIT BOARD CHECKING AND ESCUTCHEON ASS'Y DISASSEMBLY PROCEDURES · PRÜFUNG DER LEITERPLATTE UND FRONTPLATTEN-DEMONTAGE-VORGÄNGE · CONTROLE DE CARTE A CIRCUITS IMPRIMÉS ET PROCEDE DE DEMONTAGE DE PLAQUE DÉCORATIVE


③
④
③
①
②
MAIN P.W.B.
②
①


VOLUME P.W.B.
LED INDICATOR P.W.B.
⑤
⑤
HEADPHONE P.W.B.
⑤
GRAPHIC EQUALIZER P.W.B.

① Screw, bind head 4φx10 (x4)
② Screw, bind head 3φx8 (x4)
③ Screw, bind head 3φx8 (x4)
④ Screw, bind head 3φx12 (x6)
⑤ Screw, tapping bind head 3φx10 (x7)



- Set the body upright to the arrow direction.
- Das Gehäuse aufrecht in Pfeilrichtung.
- Placer la platine de l'appareil dans la pasition.

SERVICE POINT · WARTUNGSPUNKTE · POINTS DE SERVICE

- **As this unit uses a large capacity power supply, be careful of the following points when checking and repairing.**

(1) To check and repair the printed wiring boards, be sure to cut off the power and pull out the power cord. Remove the bottom plate and discharge the power capacitors by touching it with a resistor of approx. 10 ohms, 5 watts capacity at the positions C807 and C808.

(2) This amplifier employs a heat sink and so when conducting a continuity check, the unit should be placed horizontally or stood on its transformer end.

- **Parts installation method**

Great care is taken in installing parts to improve the safety of products. For example, parts are covered with tubes, or they are kept away from the printed wiring board surface. Be sure to maintain the previous conditions after replacing parts for repair.

- **Da dieses Gerät mit einer Stromversorgung hoher Kapazität ausgerüstet ist, müssen bei Prüfungen bzw. Reparaturen die folgenden Punkte beachtet werden.**

(1) Für das Prüfen bzw. Reparieren der Schaltplatine unbedingt die Stromversorgung abschalten nd das Netzkabel von der Wandsteckdose abziehen. Die Bodenplatte abmontieren und die Leistungskondensatoren entladen, indem die Klemmen an den Punkten C807 und C808 mit einem Widerstand von etwa 10 Ohm (5 W) berührt werden.

(2) Dieser Verstärker verwendet eine Wärmeschleife, so daß das Gerät bei einer Durchgangsprüfung horizontal oder auf das Transformatorende gestellt werden sollte.

- **Finbau der Teile**

Bei der Montage des Gerätes wurde besonderes Augenmerk auf Betriebssicherheit gelegt, so daß alle Teile besonders sorgfältig eingebaut wurden. Zum Beispiel wurden bestimmte Leiter mit Kunststoffschläuchen überzogen oder andere in sicherem Abstand von der Schaltplatine angeordnet. Beim Austauschen bzw. Reparieren von Teilen ist daher darauf zu achten, daß die ursprünglichen Sicherheitsmaßnahmen wiederum eingehalten werden.

- **Etant donné que cet appareil emploie une importante capacité d'énergie, faire attention aux points suivants au moment d'effectuer des contrôles et des réparations.**

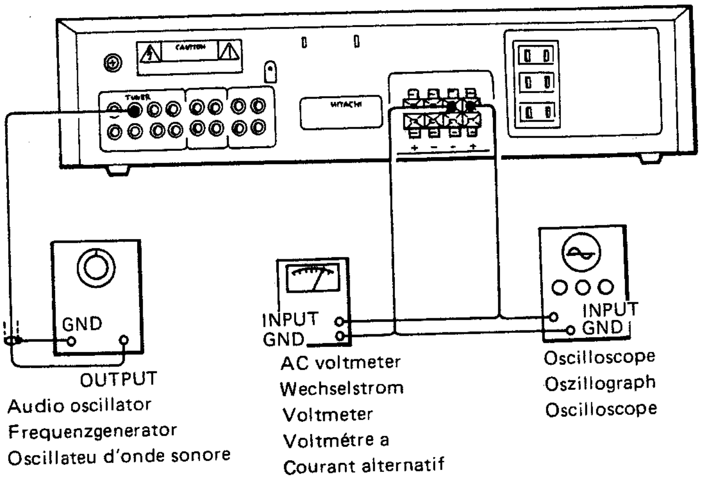
(1) Pour contrôler et vérifier les plaques à circuit imprimé, ne pas oublier de couper l'amplimentation et de débrancher le cordon secteur.
Déposer la plaque de fond et décharger les condensateurs de puissance en les touchant avec une résistance d'environ 10 ohms, 5 watts de capacité aux points C807 et C808.

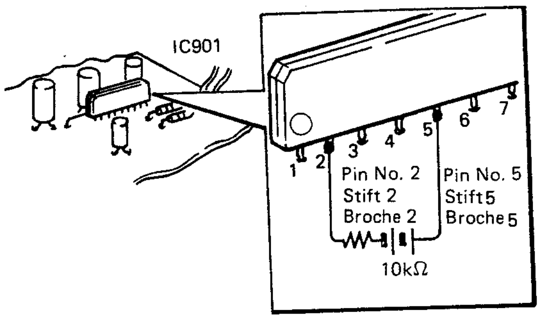
(2) Cet amplificateur est doté d'un dissipateur thermique et c'est pourquoi il doit être placé à l'horizontale ou sur son extrémité transformateur quand on procède à un essai de continuité.

- **Procédé de montage des pièces**

Les pièces sont montées en usine avec le plus grand soin pour assurer une sécurité intégrale à l'appareil. Par exemple, les pièces sont protégées par des tubes au tenues à distance des plaquettes à circuit imprimé. S'assurer que ces précautions sont également respectées au remontage.

CHECKING THE OPERATION OF THE PROTECTION CIRCUIT





When the output circuit is repaired by replacing the output transistors, etc., perform an operation check on the ASO (Area of Safe Operation) detection circuit for the output transistors and the speaker protection circuit.

1. **Operation check of the ASO detection circuit for the output transistors**
   Connect the audio oscillator to the TUNER IN terminals with the speaker terminals unloaded (speaker: disconnect). Set the frequency of the audio oscillator at 1 kHz and adjust the level of the input signal so that the voltage at the speaker terminals is approx. 5 V rms.
   Under these conditions, short-circuit the speaker terminals of the channel to which the input signal is applied using a lead wire, etc. If this short-circuit makes the ASO detection circuit operate, no output appears at the speaker terminals even if the lead wire used for short-circuiting is removed.
   Next, turn off the power switch and, after approx. 10 sec., turn the power switch on again. When output comes out of the speaker terminals, this indicates that the ASO detection circuit is operating normally.

2. **Operation check of the speaker protection circuit**
   Make sure that the relay operates (a click sound is heard) approx. 7 – 10 seconds after the power switch is turned on with the speaker terminals unloaded (speaker: disconnect).
   Next, when a resistor with a resistance of approximately 10 k ohms and two 1.5 V dry batteries are connected in series across pins 5 and 2 of main power printed wiring board IC901, the relay turns off within 1 sec. Next, when power is turned on again after at least 10 seconds have passed, the relay takes 7 – 10 seconds to start activating. Next, change the polarities of the dry batteries and carry out the above mentioned operation to check the operation of the relay.
   If the relay is energized with this operation, it means that the speaker protection circuits are functioning normally.
   When conducting this operational check, take care not to create shortcircuits with parts close at hand.

- **Phenomena and remedy when the protection circuit operates**

	Type of protection circuit	Phenomenon when the protection circuit operates	Cause	Remedy
1	Muting circuit	No sound comes out about 7 – 10 sec. after the power switch is turned ON.	————	Normal
2	Protection circuit of the output transistors	1. No sound comes out. 2. When the power switch is turned ON, the relay becomes ON, then OFF when the signal is applied.	Short circuit of speaker output terminal.	Turn off the power switch, check whether the speaker terminal is short circuited or not, and turn ON again.
3	Speaker protection circuit (DC voltage detection/protection circuit)	1. No sound comes out. 2. Neutral point voltage is more than ±2 V. 3. After the power switch is turned ON, relay doesn't turn ON.	Power amplifier faulty, etc.	Repair faulty parts in power amplifier.

KONTROLLE DER FUNKTION DER SCHUTZSCHALTUNG

Falls die Ausgangsschaltung repariert wurde, indem z.B. die Ausgangstransistoren usw. erneuert wurden, dann müssen die Ausgangstransistoren der ASO-Schutzschaltung (ASO = Area of Safe Operation) und die Tätigkeit der Lautsprecher-Schutzschaltung wie nachfolgendt beschrieben kontroliert werden.

1. **Funktionsprüfung der ASO-Schaltung für die Ausgangstransistoren**
   Den Frequenzoszillator an die TUNER IN anschließen, wobei die Lautsprecherklemmen keine Last aufweisen dürfen (Lautsprecher nicht angeschlossen). Die Frequenz des Frequenzoszillators auf 1 kHz einstellen und den Pegel des Eingangssignales so abgleichen, daß die Spannung an den Lautsprecherklemmen etwa 5 V (Mittelwert, bewertet) beträgt. In diesem Zustand sind die Lautsprecherklemmen kurzzuschließen, und zwar die Klemmen jenes Kanals, an welchen das Eingangssignal angelegt wurde. Falls dieser Kurzschluß zu einem Ansprechen der ASO-Schutzschaltung führt, dann erscheint kein Ausgangssignal an den Lautsprecherklemmen, auch nicht wenn den zum Kurzschließen der Klemmen verwendete Draht entfernt wird.
   Danach den Netzschalter abschalten und nach etwa 10 Sekunden wieder einschalten. Wenn nun ein Ausgangssignal an den Lautsprecherklemmen festgestellt wird bedeutet dies, daß die ASO-Schutzschaltung richtig arbeitet.

2. **Funktionsprufung der Lautsprecher- Schutzschaltung**
   Darauf achten, daß etwa 7 – 10 Sekunden nach dem Einschalten des Netzschalters ein Schaltgeräusch des Relais vernommen werden kann, wenn keine Last an den Lautsprecherklemmen anliegt (Lautsprecher nicht angeschlossen).
   Wenn ein Widerstand mit einem Widerstand von ca. 10 kOhm und zwei 1,5 V Trockenbatterien in Serie mit Stift 5 und Stift 2 von IC901 der gedruckten Schaltung parallelgeschaltet werden, wonach das Relais innerhalb einer Sekunde abschalten sollte. Wird danach nach mindesten 10 Sekunden die Storomversorgung wieder eingeschaltet, dann benötigt das Relais etwa 7 — 10 Sekunden bis zum Aktivieren. Anschließend die Polarität der Tockenbatterien umpoien und die obige Prüfung des Relais nochmals durchführen. Wenn auch nun das Relais aktiviert wird, dann ist die Lautsprecher-Schutzschaltung in Ordnung. Bei dieser Prüfung ist besonders darauf zu achten, daß keine der benachbarten Teile kurzgeschlossen werden. Wird das Relais dadurch erregt, bedeutet es daß die Schutzschaltkreise der Lautsprecher normal funktionieren. Wenn diese Funktionsprüfung vorgenommen wird, darauf achten, daß keine Kurzschlüsse mit naheliegenden Teilen entstehen.

• Ursachen für das Ansprechen der Schutzschaltung und etwaige Abhilfen

	Schutzschaltung	Wirkung, wenn die Schutzschaltung anspricht	Ursache	Abhilfe
1	Muting- Schaltkreis	Kein Ton von den Lautsprechern bis etwa 7 bis 10 Sekunden nach dem Einschalten des Netzschalters.	————	Normal
2	Schutzstromkreis für die Ausgangstransistoren.	1. Kein Ton. 2. Nachdem der Netzschalter eingeschalter wurde, spricht das Relais an, es wird wieder angeschaltet, sobald ein Signal eingegeben wird.	Kurzschluß an den Lautsprecherklemmen	Netzschalter abschalten, auf Kurzschluß an den lautsprecherklemmen achten und diesenf ggf. beheben, danach wieder einschalten.
3	Lautsprecher-Schutzschaltung	1. Kein Ton. 2. Nullpunktspannung beträgt mehr als ±2 V 3. Wenn der Netzschalter eingeschaltet wird, spricht das Relais nicht an.	Endstufe schadhaft usw.	Die schadhaften Teile der Endstufe reparieren.

CONTRÔLE DE FONCTIONNEMENT DU CIRCUIT DE PROTECTION

Quand le circuit de sortie est réparé à la suite du remplacement des transistors de sortie, etc., effectuer une vérification de fonctionnement du circuit de détection ASO (Zone d'Opération Protégée) pour transistors de sortie et du circuit de protection de haut-parleur.

1. Contrôle de fonctionnement du circuit de détection ASO pour les transistors de sortie

Brancher un oscillateur d'onde sonore aux bornes TUNER IN quand aucune charge n'est appliquée aux bornes de haut-parleur (haut-parleur débranché). Régler la fréquence de l'oscillateur d'onde sonore à 1 kHz et ajuster le niveau du signal d'entrée de telle sorte que la tension appliquée aux bornes de haut-parleur soit environ de 5 V efficace. Quand ces conditions sont obtenues, court-circuiter les bornes de haut-parleur du canal recevant le signal d'entrée en se servant d'un fil de jonction, etc. Si le court-circuit met le circuit de détection de type ASO en fonction, aucune sortie n'est relevée aux bornes de haut-parleur même si le fil de jonction utilisé pour le court-circuitage est retiré.
Ensuite, mettre l'interrupteur général à l'arrêt et après un délais approximatif de 10 secondes, le mettre à nouveau en fonction. Quand la sortie parvient aux bornes de haut-parleur, c'est le signe que le circuit de détection de type ASO fonctionne normalement.

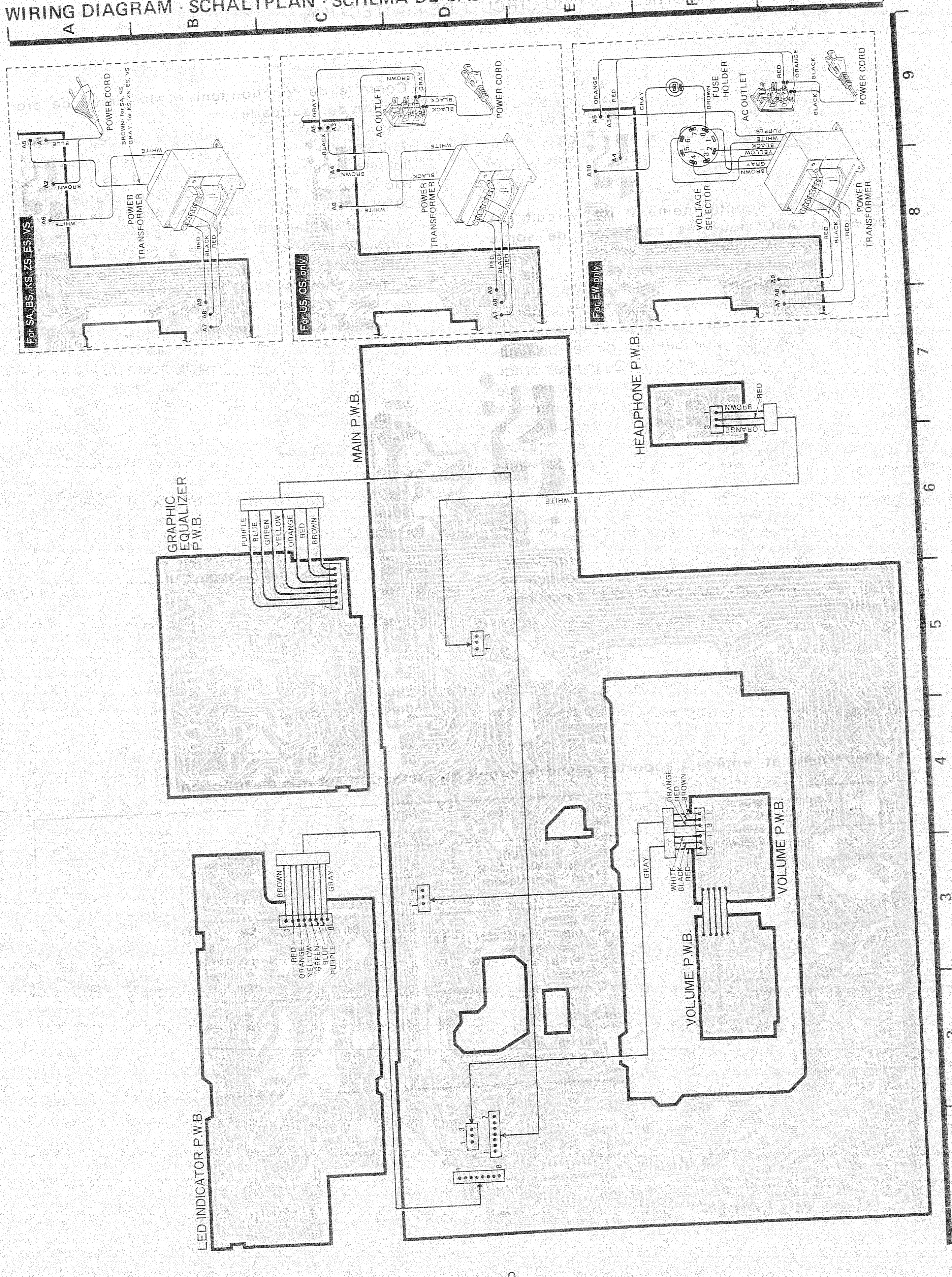
2. Contrôle de fonctionnement du circuit de protection de haut-parleur

S'assurer que le relais fonctionne (un déclic se produit) environ 7 - 10 secondes après la mise en fonction de l'interrupteur général quand les bornes de haut-parleur ne reçoivent aucune charge (haut-parleur débranché). Lorsqu'une résistance d'environ 10 kilohms et deux piles de 1,5 V sont connectées en série aux broches 5 et 2 de la plaquette imprimée IC901 d'ampli principal, le relais se met hors fonction en moins d'une seconde. Si L'alimentation est rétablie au moins 10 secondes plus tard, il faut au relais 7 – 10 secondes pour se réenclencher.
Ensuite, modifier les polarités des piles sèches et procéder au contrôle précédemment décrit pour s'assurer que le fonctionnement du relais est normal. Si ces conditions permettent au relais de se mettre en fontion, cela veut dire que le circuit de protection de haut-parleur fonctionne normalement. Par ailleurs, faire attention de ne pas counrt-circuiter les pièces et composants avoisinants au cours de ce contrôle.
Si le relai est énergétisé par cette orpération, c'est la preuve que les circuits de protection des enceintes fonctionnent normalement.
Lorsque l'on procède à cet essai de fonctionnement, prendre soin à ne pas provoquer un court-circuit avec les pièces voisines.

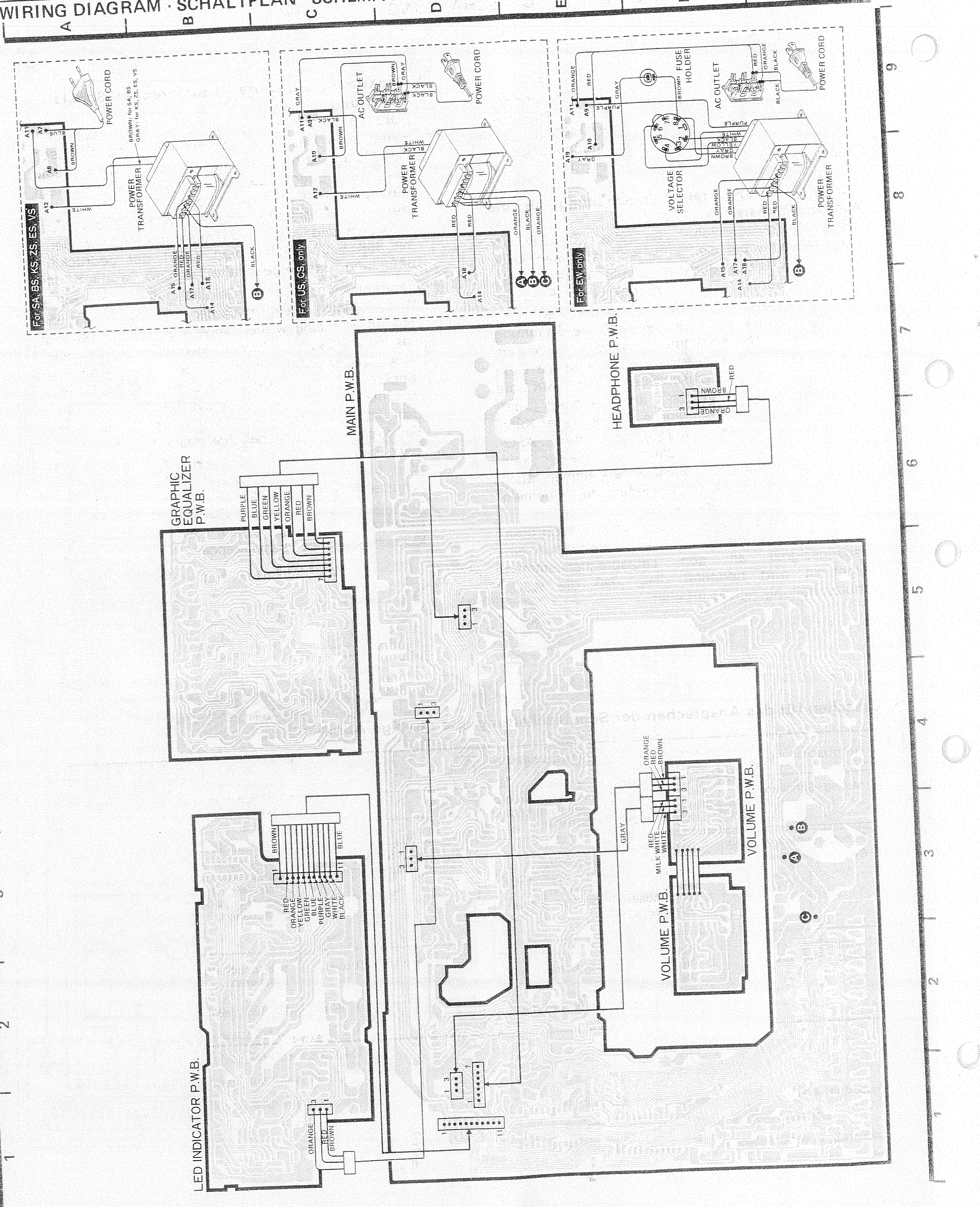
- **Phénomene et remède à apporter quand le circuit de protection est mis en fonction.**

	Type de circuit de protection	Phénomène produit quand le circuit de protection est mis en fonction.	Cause	Remède
1	Circuit de réglage silencieux	Aucun son n'est obtenu pendant 7 – 10 secondes après la mis en fonction de l'interrupteur d'alimentation.	————	Condition normale
2	Circuit de protection des transistors de sortie.	1. Aucun son n'est obtenu. 2. Dès que l'interrupteur general est réglé sur ON, le relais est mis sous tension puis est mis à l'arrêt quand le signal est applique.	Court-circuit des bornes de sortie d'enceinte	Mettre l'interrupteur général à l'arrêt, s'assurer que les bornes d'enceinte ne sont pas court-circuitées et remettre sous tension.
3	Circuit de protection d'enceinte	1. Aucun son n'est obtenu. 2. La tension de masse est supérieure à ±2 V. 3. Dés que l'interrupteur général est reglé sur ON, le relais n'est pas mis sous tension.	Panne d'ampli de puissance, etc.	Reparer les piece endommagées de l'ampli de puissance.

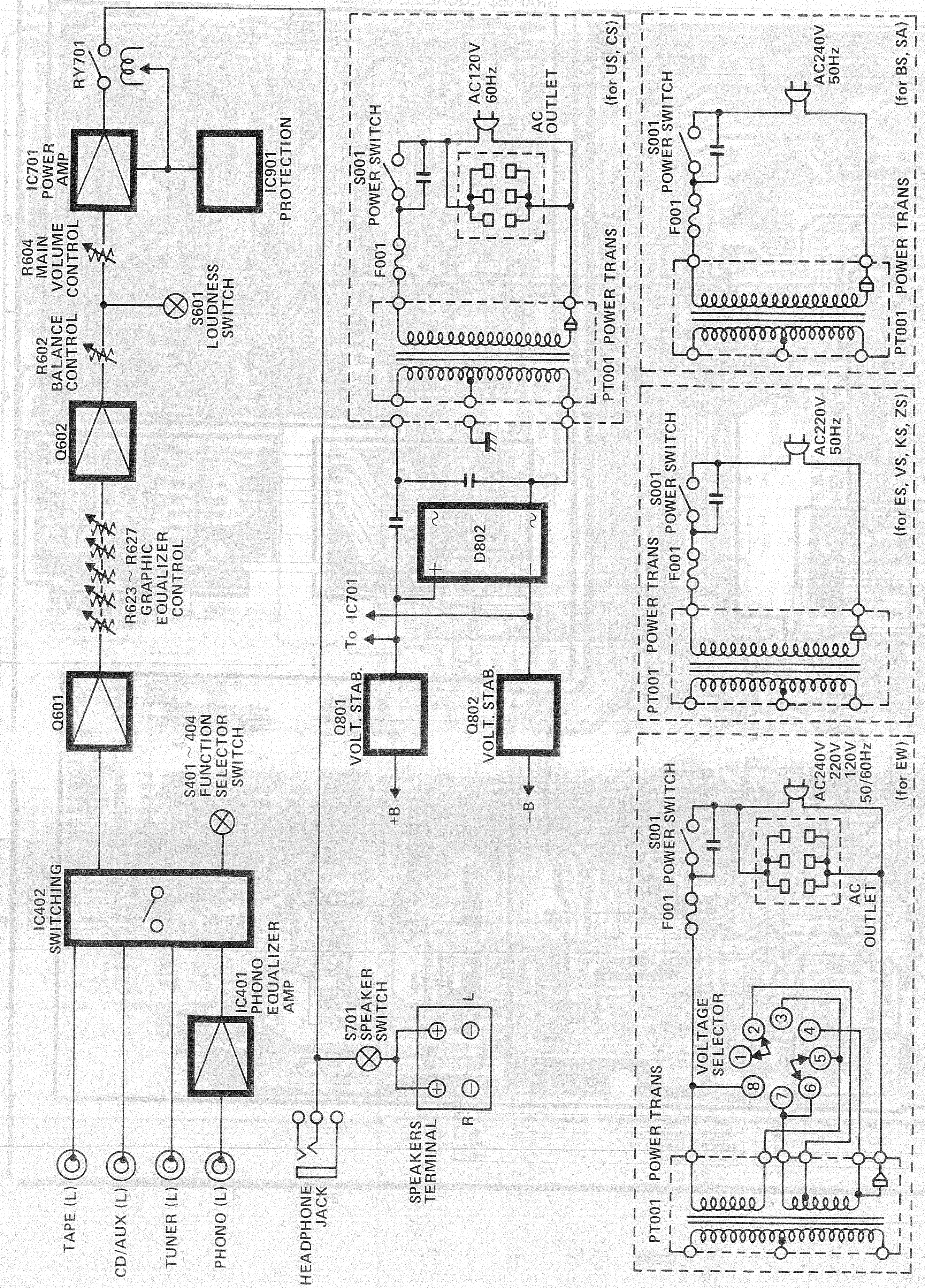
WIRING DIAGRAM · SCHALTPLAN · SCHEMA DE CÄBLAGE (HA-37)


A
B
C
D
E
F
G
9
8
7
6
5
4
3
2
1
For SA, BS, KS, ZS, ES, VS
For US, CS only
For EW only
POWER CORD
POWER TRANSFORMER
AC OUTLET
FUSE HOLDER
VOLTAGE SELECTOR
MAIN P.W.B.
HEADPHONE P.W.B.
GRAPHIC EQUALIZER P.W.B.
VOLUME P.W.B.
LED INDICATOR P.W.B.
PURPLE
BLUE
GREEN
YELLOW
ORANGE
RED
BROWN
BLACK
WHITE
GRAY

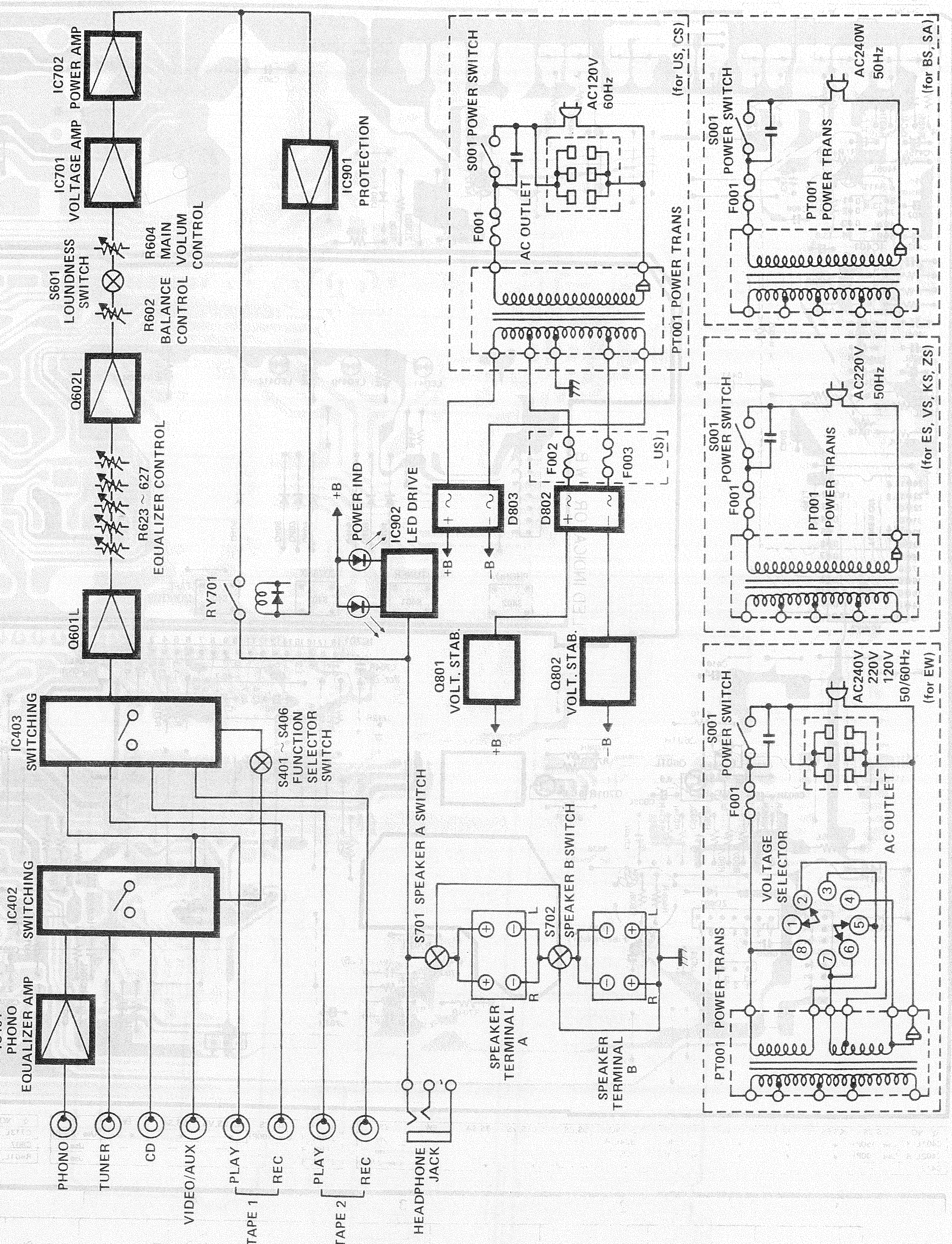
WIRING DIAGRAM · SCHALTPLAN · SCHEMA DE CÄBLAGE (HA-57)


A
B
C
D
E
F
G
9
8
7
6
5
4
3
2
1
For SA, BS, KS, ZS, ES, VS
For US, CS only
For EW only
POWER CORD
POWER TRANSFORMER
AC OUTLET
FUSE HOLDER
VOLTAGE SELECTOR
MAIN P.W.B.
HEADPHONE P.W.B.
GRAPHIC EQUALIZER P.W.B.
VOLUME P.W.B.
LED INDICATOR P.W.B.
PURPLE
BLUE
GREEN
YELLOW
ORANGE
RED
BROWN
BLACK
WHITE
MILK WHITE
GRAY

BLOCK DIAGRAM · BLOK SCHEMA · SEMA (HA-37)

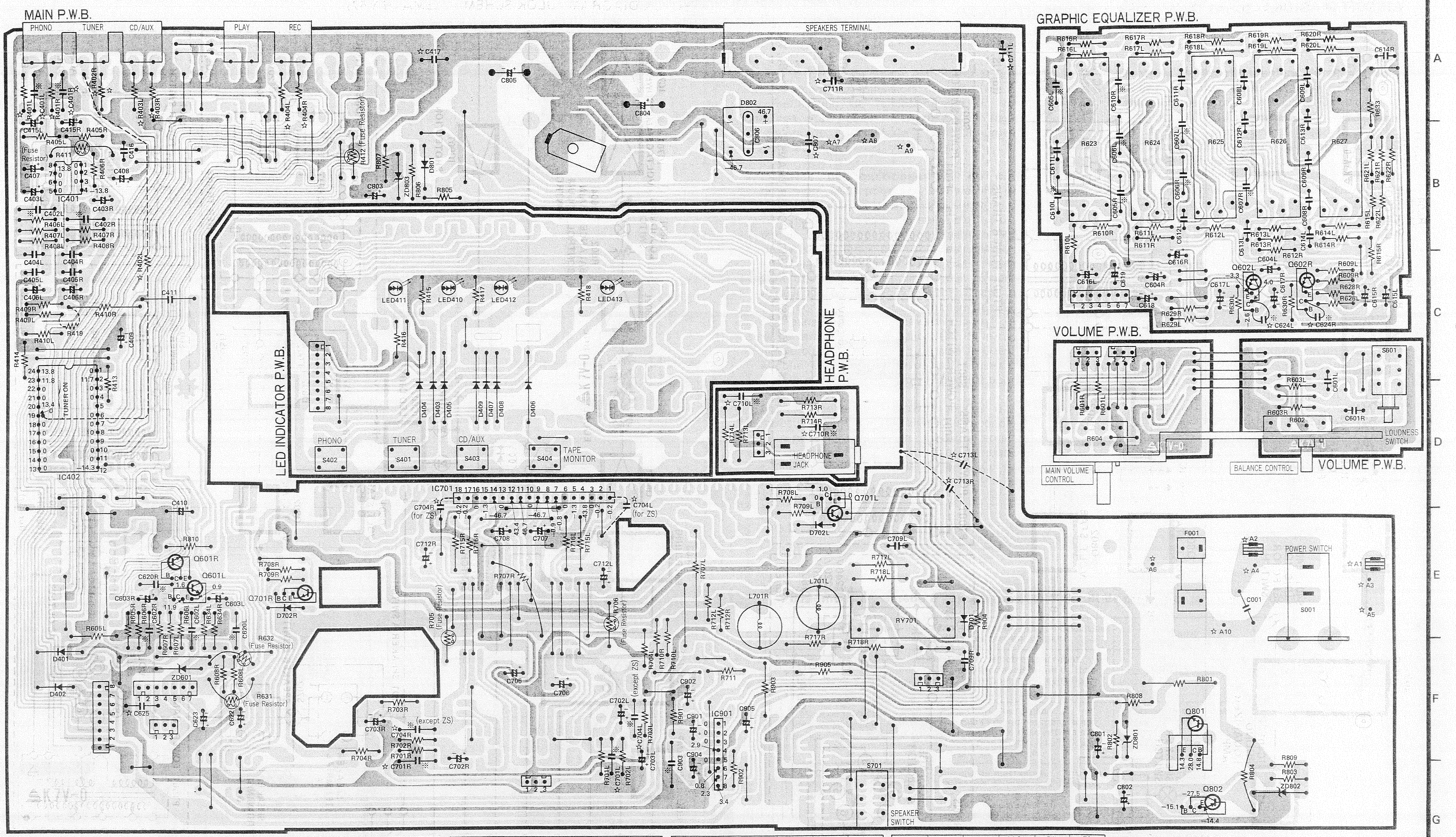

RY701
IC701 POWER AMP
IC901 PROTECTION
R604 MAIN VOLUME CONTROL
S601 LOUDNESS SWITCH
R602 BALANCE CONTROL
Q602
R623 ~ R627 GRAPHIC EQUALIZER CONTROL
Q601
S401 ~ 404 FUNCTION SELECTOR SWITCH
IC402 SWITCHING
IC401 PHONO EQUALIZER AMP
TAPE (L)
CD/AUX (L)
TUNER (L)
PHONO (L)
HEADPHONE JACK
S701 SPEAKER SWITCH
SPEAKERS TERMINAL
L
R
S001 POWER SWITCH
AC120V 60Hz
AC OUTLET
(for US, CS)
F001
PT001 POWER TRANS
D802
To IC701
Q801 VOLT. STAB.
Q802 VOLT. STAB.
+B
−B
AC240V 50Hz
(for BS, SA)
AC220V 50Hz
(for ES, VS, KS, ZS)
AC240V 220V 120V 50/60Hz
(for EW)
VOLTAGE SELECTOR
1
2
3
4
5
6
7
8

BLOCK DIAGRAM · BLOK SCHEMA · SEMA (HA-57)


IC702 POWER AMP
IC701 VOLTAGE AMP
IC901 PROTECTION
S601 LOUNDNESS SWITCH
R604 MAIN VOLUM CONTROL
R602 BALANCE CONTROL
Q602L
R623 ~ 627 EQUALIZER CONTROL
Q601L
RY701
+B
POWER IND
IC902 LED DRIVE
D803
D802
F002
F003
US)
+B
−B
Q801 VOLT. STAB.
Q802 VOLT. STAB.
IC403 SWITCHING
S401 ~ S406 FUNCTION SELECTOR SWITCH
IC402 SWITCHING
IC401 PHONO EQUALIZER AMP
PHONO
TUNER
CD
VIDEO/AUX
PLAY
REC
TAPE 1
PLAY
REC
TAPE 2
HEADPHONE JACK
S701 SPEAKER A SWITCH
S702 SPEAKER B SWITCH
SPEAKER TERMINAL A
SPEAKER TERMINAL B
L
R
S001 POWER SWITCH
AC120V 60Hz
AC OUTLET
F001
PT001 POWER TRANS
(for US, CS)
AC240W 50Hz
(for BS, SA)
AC220V 50Hz
(for ES, VS, KS, ZS)
AC240V 220V 120V 50/60Hz
(for EW)
VOLTAGE SELECTOR
1
2
3
4
5
6
7
8

PRINTED WIRING BOAD · PRINTPLATTEN · PLAN DE BASE (HA-37)

※ indicates axial lead cylindrical ceramic capacitor.
☆ indicates those parts that are specified to be used differently for models and destination. (See the table in the drowings.)


MAIN P.W.B.
PHONO
TUNER
CD/AUX
PLAY
REC
SPEAKERS TERMINAL
GRAPHIC EQUALIZER P.W.B.
VOLUME P.W.B.
LED INDICATOR P.W.B.
HEADPHONE P.W.B.
HEADPHONE JACK
TAPE MONITOR
MAIN VOLUME CONTROL
BALANCE CONTROL
LOUDNESS SWITCH
POWER SWITCH
SPEAKER SWITCH
IC401
IC402
IC701
IC901
RY701
L701R
L701L
F001
S001
Q601R
Q601L
Q701R
Q701L
Q602L
Q602R
Q801
Q802
LED411
LED410
LED412
LED413
S402
S401
S403
S404
S601
S701
(Fuse Resistor)
A
B
C
D
E
F
G

☆ NO.	US,CS	KS,ES,VS	BS,SA	EW	ZS
C401L,R	Use (150P)	←	←	←	Use (470P)
C402L,R	Use (100P)	←	←	←	Use (220P)
C417	—	—	—	—	Use

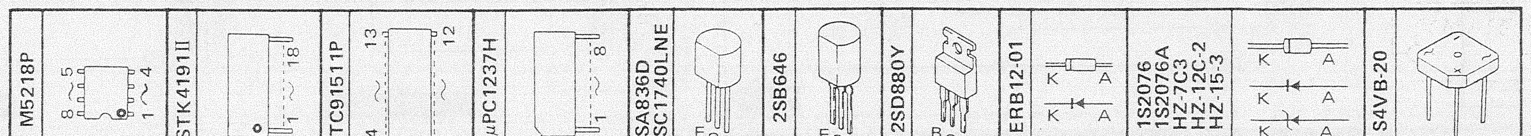
☆ NO.	US,CS	KS,ES,VS	BS,SA	EW	ZS
C624L,R	—	—	—	—	Use
C625	—	—	—	—	Use
C701L,R	Use (470P)	←	←	←	Use (270P)

☆ NO.	US,CS	KS,ES,VS	BS,SA	EW	ZS
C704L,R	Use (100P)	←	←	←	Use (270P)
C710L,R	—	—	—	—	Use
C711L,R	—	—	—	—	Use

☆ NO.	US,CS	KS,ES,VS	BS,SA	EW	ZS
C713L,R	—	—	—	—	Use
C807	—	—	—	—	Use
R401L,R	Use (560)	←	←	←	Use (3.3K)

NO.	US,CS	KS,ES,VS	BS,SA	EW	ZS
R402L,R	Jumper	←	←	←	Use
R403L,R	Jumper	←	←	←	Use
R404L,R	Jumper	←	←	←	Use

1 2 3 4 5 6 7 8 9


M5218P
STK4191II
TC9151IP
µPC1237H
2SA836D
2SC1740LNE
2SB646
2SD880Y
ERB12-01
1S2076
1S2076A
HZ-7C3
HZ-12C-2
HZ-15-3
S4VB-20
E C B
B C E
K A

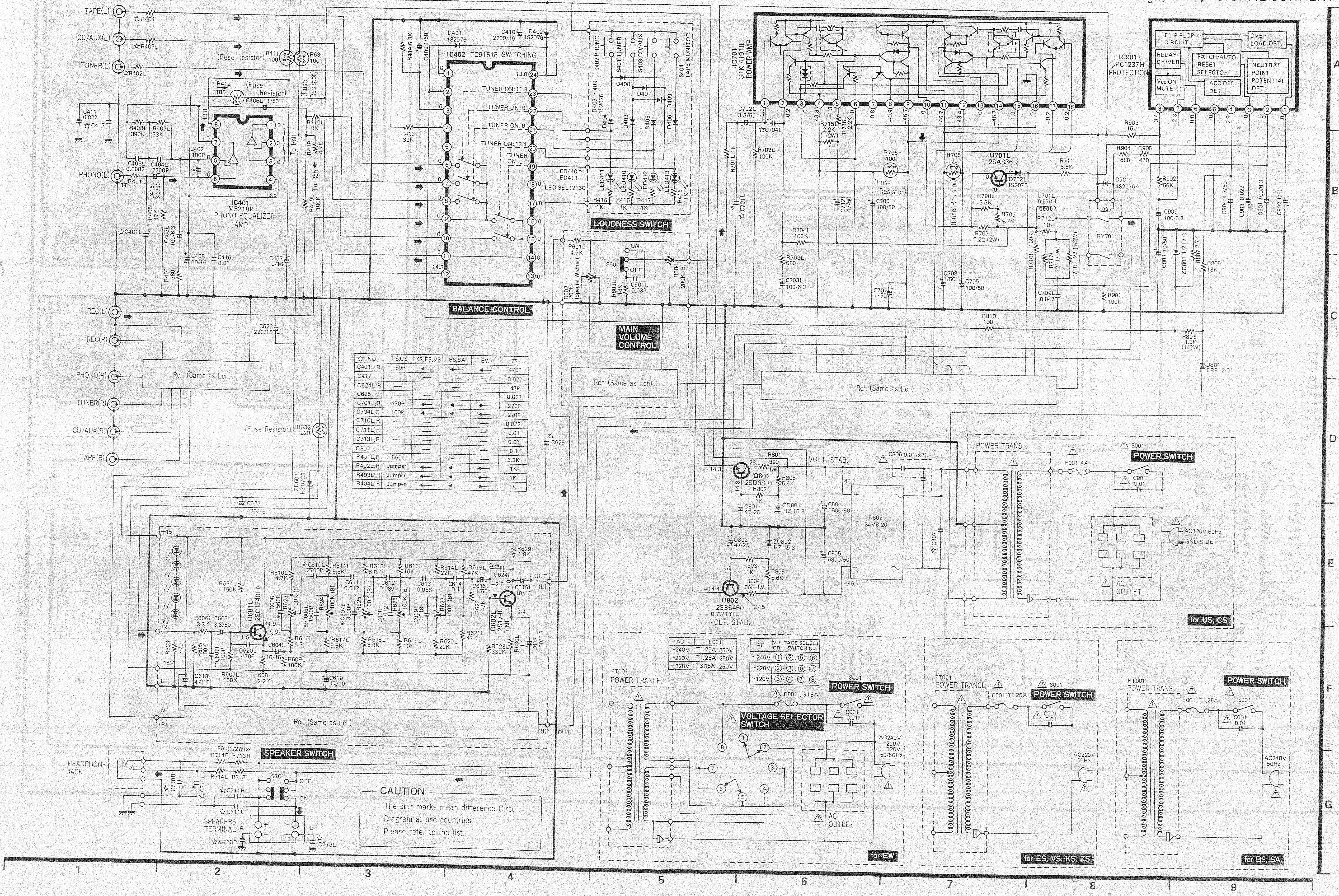
[▨ : Earth, ▨ : Other]

CIRCUIT DIAGRAM · SCHALTPLAN · PLAN DE CIRCUIT (HA-37)

※ indicates axial lead cylindrical ceramic capacitor.

☆ indicates those parts that are specified to be used differently for models and destination. (See the table in the drowings.)

➡: SIGNAL CURRENT


TAPE(L)
CD/AUX(L)
TUNER(L)
PHONO(L)
REC(L)
REC(R)
PHONO(R)
TUNER(R)
CD/AUX(R)
TAPE(R)
(Fuse Resistor) R411 100
R631 100
R412 100 (Fuse Resistor)
IC401 M5218P PHONO EQUALIZER AMP
IC402 TC9151P SWITCHING
TUNER ON: 11.8
TUNER ON: 0
TUNER ON: 13.4
S402 PHONO
S401 TUNER
S403 CD/AUX
S404 TAPE MONITOR
LED410 ~ LED413
LED SEL1213C
LOUDNESS SWITCH
S601 ON OFF
BALANCE CONTROL
MAIN VOLUME CONTROL
Rch (Same as Lch)
IC701 STK-4191II POWER AMP
IC901 μPC1237H PROTECTION
FLIP-FLOP CIRCUIT
OVER LOAD DET.
RELAY DRIVER
PATCH/AUTO RESET SELECTOR
NEUTRAL POINT POTENTIAL DET.
Vcc ON MUTE
ACC OFF DET.
Q701L 2SA836D
RY701
Q801 2SD880Y
Q802 2SB6460 0.7WTYPE
VOLT. STAB.
D802 S4VB-20
POWER TRANS
F001 4A
S001
POWER SWITCH
AC120V 60Hz
GND SIDE
AC OUTLET
for US, CS
Q601L 2SC1740LNE
Q602L 2SA1740 LNE
(Fuse Resistor) R632 220
HEADPHONE JACK
SPEAKER SWITCH
S701 OFF ON
SPEAKERS TERMINAL R L
PT001 POWER TRANCE
F001 T3.15A
VOLTAGE SELECTOR SWITCH
AC240V 220V 120V 50/60Hz
for EW
PT001 POWER TRANCE
F001 T1.25A
AC220V 50Hz
for ES, VS, KS, ZS
PT001 POWER TRANS
F001 T1.25A
AC240V 50Hz
for BS, SA
1 2 3 4 5 6 7 8 9
A B C D E F G

☆ NO.	US,CS	KS,ES,VS	BS,SA	EW	ZS
C401L,R	150P	←	←	←	470P
C417	—	—	—	—	0.027
C624L,R	—	—	—	—	47P
C625	—	—	—	—	0.027
C701L,R	470P	←	←	←	270P
C704L,R	100P	←	←	←	270P
C710L,R	—	—	—	—	0.022
C711L,R	—	—	—	—	0.01
C713L,R	—	—	—	—	0.01
C807	—	—	—	—	0.1
R401L,R	560	—	—	—	3.3K
R402L,R	Jumper	←	←	←	1K
R403L,R	Jumper	←	←	←	1K
R404L,R	Jumper	←	←	←	1K

AC	F001
~240V	T1.25A 250V
~220V	T1.25A 250V
~120V	T3.15A 250V

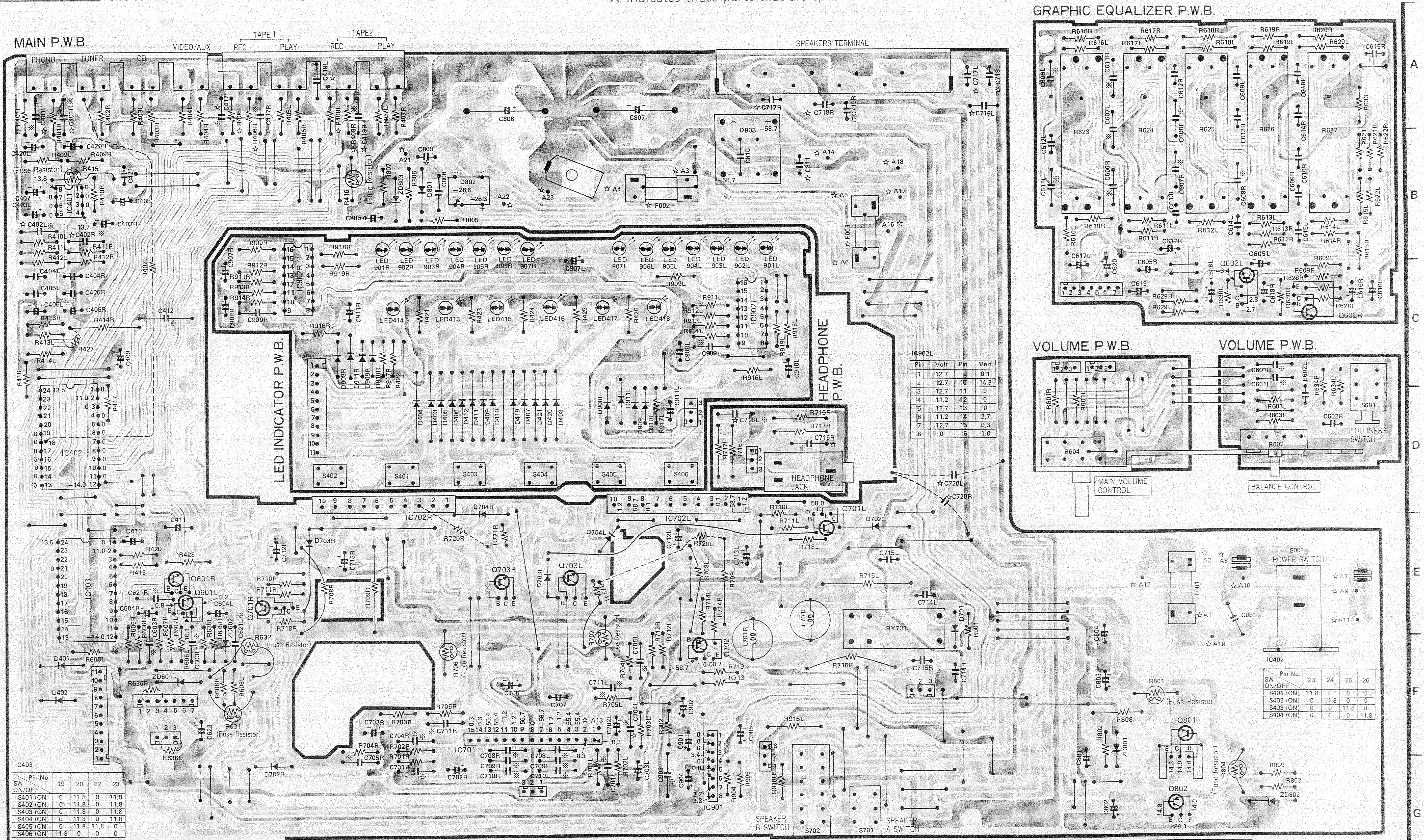
AC	VOLTAGE SELECTOR SWITCH No.
~240V	①-②, ⑤-⑥
~220V	②-③, ⑥-⑦
~120V	③-④, ⑦-⑧

CAUTION

The star marks mean difference Circuit Diagram at use countries.
Please refer to the list.

PRINTED WIRING BOAD · PRINTPLATTEN · PLAN DE BASE (HA-57)

※ indicates axial lead cylindrical ceramic capacitor.
☆ indicates those parts that are specified to be used differently for models and destination. (See the table in the drowings.)


GRAPHIC EQUALIZER P.W.B.
MAIN P.W.B.
PHONO
TUNER
CD
VIDEO/AUX
TAPE 1
REC
PLAY
TAPE2
REC
PLAY
SPEAKERS TERMINAL
LED INDICATOR P.W.B.
HEADPHONE P.W.B.
HEADPHONE JACK
VOLUME P.W.B.
VOLUME P.W.B.
MAIN VOLUME CONTROL
BALANCE CONTROL
LOUDNESS SWITCH
S001
POWER SWITCH
SPEAKER B SWITCH
SPEAKER A SWITCH
(Fuse Resistor)
A
B
C
D
E
F
G

IC902L

Pin	Volt	Pin	Volt
1	12.7	9	0.1
2	12.7	10	14.3
3	12.7	11	0
4	11.2	12	0
5	12.7	13	0
6	11.2	14	2.7
7	12.7	15	0.3
8	0	16	1.0

IC403

Pin No. / SW ON/OFF	19	20	22	23
S401 (ON)	0	11.8	0	11.8
S402 (ON)	0	11.8	0	11.8
S403 (ON)	0	11.8	0	11.8
S404 (ON)	0	11.8	0	11.8
S405 (ON)	0	11.8	11.8	0
S406 (ON)	11.8	0	0	0

IC402

Pin No. / SW ON/OFF	23	24	25	26
S401 (ON)	11.8	0	0	0
S402 (ON)	0	11.8	0	0
S403 (ON)	0	0	11.8	0
S404 (ON)	0	0	0	11.8

☆ No.	US,CS	KS,ES,VS	BS,SA	EW	ZS
C401LR	Use(100P)	←	←	←	Use(470P)
C402LR	Use(100P)	←	←	←	Use(220P)
C417LR	—	—	—	—	Use

☆ No.	US,CS	KS,ES,VS	BS,SA	EW	ZS
C419LR	—	—	—	—	Use
C704LR	Use(47P)	←	←	←	Use(270P)
C716LR	—	—	—	—	Use

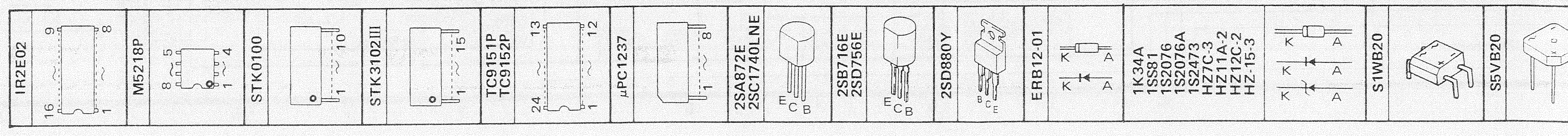
☆ No.	US,CS	KS,ES,VS	BS,SA	EW	ZS
C717LR	—	—	—	—	Use
C718LR	—	—	—	—	Use
C719LR	—	—	—	—	Use

☆ No.	US,CS	KS,ES,VS	BS,SA	EW	ZS
C720LR	—	—	—	—	Use
C809	—	—	—	—	Use
C811	—	—	—	—	Use

☆ No.	US,CS	KS,ES,VS	BS,SA	EW	ZS
R401LR	Use(150)	←	←	←	Use(3.3K)
R406LR	Jumper	←	←	←	Use
R408LR	Jumper	←	←	←	Use

☆ No.	US,CS	KS,ES,VS	BS,SA	EW	ZS
F002	—	Use	←	←	←
F003	—	Use	←	←	←

1
2
3
4
5
6
7
8
9


IR2E02
16
9
8
1
M5218P
8
5
1
4
STK0100
1
10
STK3102III
1
15
TC9151P
TC9152P
24
13
12
1
μPC1237
1
8
2SA872E
2SC1740LNE
E
C
B
2SB716E
2SD756E
E
C
B
2SD880Y
B
C
E
ERB12-01
K
A
1K34A
1SS81
1S2076
1S2076A
1S2473
HZ7C-3
HZ11A-2
HZ12C-2
HZ-15-3
K
A
S1WB20
S5VB20

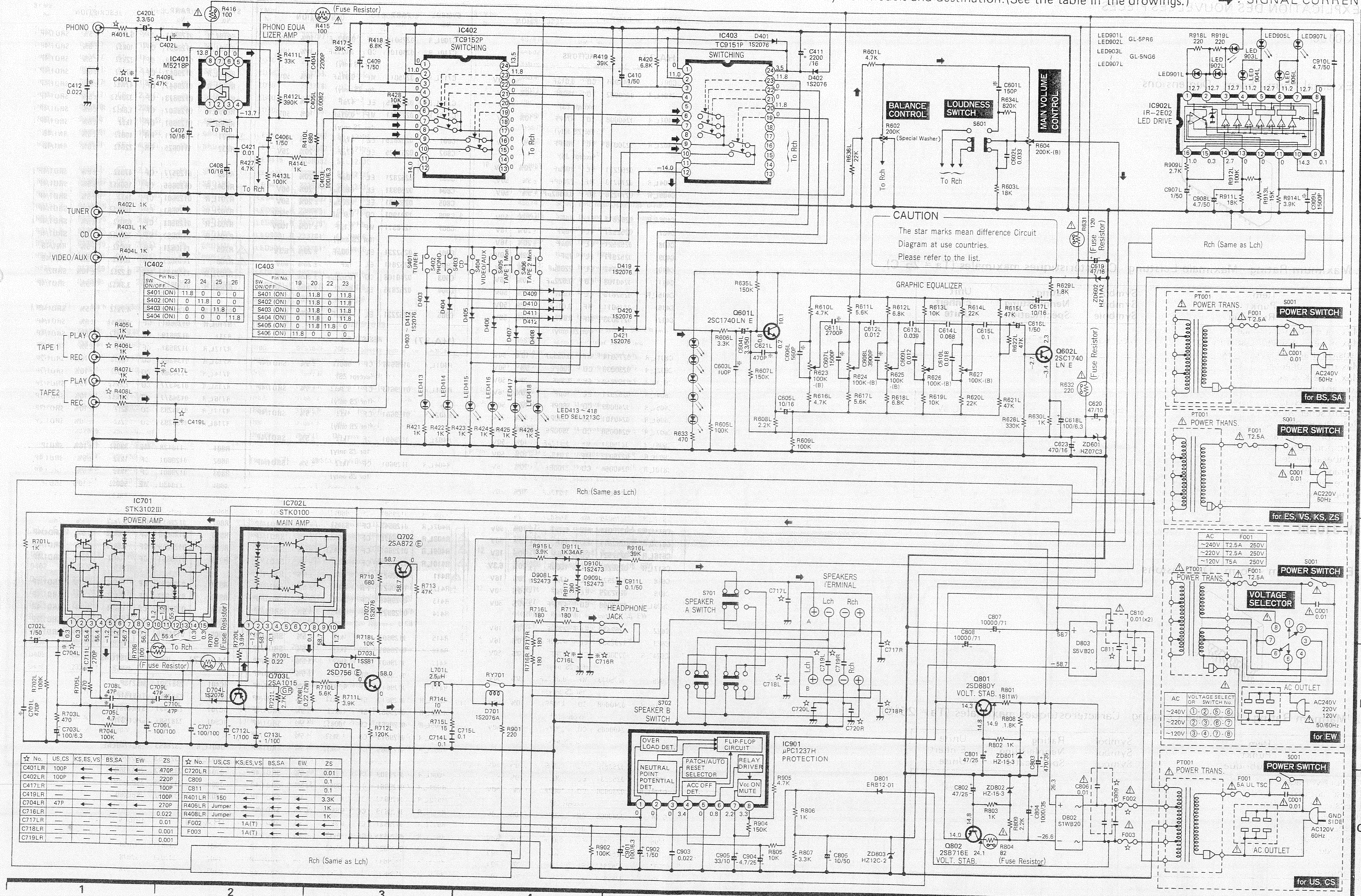
[▨ : Earth, ▨ : Other]

CIRCUIT DIAGRAM · SCHALTPLAN · PLAN DE CIRCUIT (HA-57)

※ indicates axial lead cylindrical ceramic capacitor.

☆ indicates those parts that are specified to be used differently for models and destination. (See the table in the drawings.)

➡ : SIGNAL CURRENT


PHONO
TUNER
CD
VIDEO/AUX
TAPE 1 PLAY REC
TAPE2 PLAY REC
IC401 M5218P
PHONO EQUA LIZER AMP
(Fuse Resistor) R416 100
(Fuse Resistor) R415 100
IC402 TC9152P SWITCHING
IC403 TC9151P SWITCHING
D401 1S2076
D402 1S2076
To Rch
S401 TUNER
S402 PHONO
S403 CD
S404 VIDEO/AUX
S405 TAPE 1 Mon
S406 TAPE 2 Mon
D403 ~ D412 1S2076
LED413 ~ 418 LED SEL1213C
D419 1S2076
D420 1S2076
D421 1S2076
BALANCE CONTROL
R602 200K (Special Washer)
LOUDNESS SWITCH
S601
MAIN VOLUME CONTROL
R604 200K-(B)
LED901L LED902L GL-5PR6
LED903L / LED907L GL-5NG6
IC902L IR-2E02 LED DRIVE
Q601L 2SC1740LN E
Q602L 2SC1740 LN E
GRAPHIC EQUALIZER
R623 100K-(B)
R624 100K-(B)
R625 100K-(B)
R626 100K-(B)
R627 100K-(B)
R631 120 (Fuse Resistor)
R632 220 (Fuse Resistor)
ZD602 HZ11A2
ZD601 HZ07C3
Rch (Same as Lch)
PT001 POWER TRANS.
F001 T2.5A
S001 POWER SWITCH
C001 0.01
AC240V 50Hz
for BS, SA
AC220V 50Hz
for ES, VS, KS, ZS
VOLTAGE SELECTOR
AC OUTLET
AC240V 220V 120V 50/60Hz
for EW
F001 5A UL TSC
GND SIDE
AC120V 60Hz
for US, CS
IC701 STK3102III POWER AMP
IC702L STK0100 MAIN AMP
Q702 2SA872 (E)
Q701L 2SD756 (E)
Q703L 2SA1015 (GR)
D702L 1S2076
D703L 1SS81
D704L 1S2076
R707 100 (Fuse Resistor)
(Fuse Resistor)
R708L 0.22 (2W)
L701L 2.5μH
RY701
D701 1S2076A
D908L 1S2473
D911L 1K34AF
D910L 1S2473
D909L 1S2473
HEADPHONE JACK
S701 SPEAKER A SWITCH
S702 SPEAKER B SWITCH
SPEAKERS TERMINAL
Lch Rch
IC901 μPC1237H PROTECTION
OVER LOAD DET.
FLIP-FLOP CIRCUIT
NEUTRAL POINT POTENTIAL DET.
PATCH/AUTO RESET SELECTOR
RELAY DRIVER
ACC OFF DET.
Vcc ON MUTE
D801 ERB12-01
ZD803 HZ12C-2
D803 S5VB20
D802 S1WB20
Q801 2SD880Y VOLT. STAB.
Q802 2SB716E VOLT. STAB.
R801 18 (1W)
R804 82 (Fuse Resistor)
ZD801 HZ-15-3
ZD802 HZ-15-3
F002
F003
1 2 3 4 5 6 7 8 9
A B C D E F G

IC402

SW ON/OFF \ Pin No.	23	24	25	26
S401 (ON)	11.8	0	0	0
S402 (ON)	0	11.8	0	0
S403 (ON)	0	0	11.8	0
S404 (ON)	0	0	0	11.8

IC403

SW ON/OFF \ Pin No.	19	20	22	23
S401 (ON)	0	11.8	0	11.8
S402 (ON)	0	11.8	0	11.8
S403 (ON)	0	11.8	0	11.8
S404 (ON)	0	11.8	0	11.8
S405 (ON)	0	11.8	11.8	0
S406 (ON)	11.8	0	0	0

CAUTION

The star marks mean difference Circuit Diagram at use countries. Please refer to the list.

☆ No.	US,CS	KS,ES,VS	BS,SA	EW	ZS
C401LR	100P	←	←	←	470P
C402LR	100P	←	←	←	220P
C417LR	—	—	—	—	100P
C419LR	—	—	—	—	100P
C704LR	47P	←	←	←	270P
C716LR	—	—	—	—	0.022
C717LR	—	—	—	—	0.01
C718LR	—	—	—	—	0.001
C719LR	—	—	—	—	0.001

☆ No.	US,CS	KS,ES,VS	BS,SA	EW	ZS
C720LR	—	—	—	—	0.01
C809	—	—	—	—	0.1
C811	—	—	—	—	0.1
R401LR	150	←	←	←	3.3K
R406LR	Jumper	←	←	←	1K
R408LR	Jumper	←	←	←	1K
F002	—	1A(T)	←	←	←
F003	—	1A(T)	←	←	←

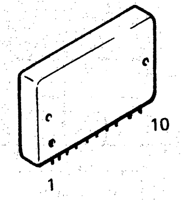
AC	F001
~240V	T2.5A 250V
~220V	T2.5A 250V
~120V	T5A 250V

AC	VOLTAGE SELECTOR SWITCH No.
~240V	①-②, ⑤-⑥
~220V	②-③, ⑥-⑦
~120V	③-④, ⑦-⑧

EXPLANATION OF THE NEW PARTS · ERLÄUTERUNG DER NEVEN TEILE · EXPLICATION DES NOUVELLES PIECES

STK-0100

1. External Form · Form · Demensions

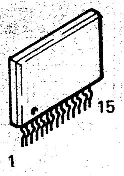


2. Maximum Rating · Maximale Leistung · Caractéristiques maximales (Ta = 25°C)

Item Punkt Rubrique	Symbol Symbol Symbole	Rating Nennleistung Spécification	Unit Einheit Unité
Maximum supply voltage Maximaler Versorgungsspannung Tension d'alimentation maximum	Vcc max	±75	V
Maximum collector current Maximale Kollektrostrom Courant maximum de collecteur	IC max	12	A
Thermal resistance Thermischer widerstand Résistance thermique	θj-C	1.1	°C/W
Junction temperature Verbindungstemperatur Température de jonction	Tj	150	°C
Storage temperature Halte temperature Température de stockage	Tstg	−30 ~ ±115	°C

STK-3102Ⅲ

1. External Form · Form · Demensions



2. Maimum Rating · Maximale Leistung · Caractérostoques maximales (Ta = 25°C)

Item Punkt Rubrique	Symbol Symbol Symbol	Rating Nennleistung Spécification	Unite Einheit Unité
Supply voltage Versorgungsspannung Tension d'alimentation	Vcc	±75	V
Case temperature Gehäuse temperatur Température de la caisse	Tc	115	°C
Storage Temperature Haltetemperatur Temprérature	Tstg	−30 ~ ±115	°C

REPLACEMENT PARTS LIST · ERSATZTEILLISTE · TABLEAU DES PIÉCES

CD: Ceramic discal
PP: Polypro-pylene
MO: Metal, Oxide
CC: Cylindrical ceramic
ST: Styrol
CO: Composition
EL: Electrolytic
CF: Carbon film
FR: Fuse resister
MF: Mylar, film
ME: Metal

SYMBOL No.	PART No.	DESCRIPTION			
(HA-37)		CAPACITORS			
⚠ C001	1243901	CD	0.01μF	+100 −0 %	400V
C401L, R	0240002	CD	150PF	±10%	50V
		(except ZS)			
C401L, R	0240008	CD	470PF	±10%	50V
		(for ZS only)			
C402L, R	0230036	CC	100PF	±5%	50V
		(except ZS)			
C403L, R	0252231	EL	100μF	±20%	6.3V
C404L, R	0274213	MF	2200PF	±5%	50V
C405L, R	0274236	MF	0.0082μF	±5%	50V
C406L, R	0252811	EL	1μF	±20%	50V
C407	0252521	EL	10μF	±20%	16V
C408	0252521	EL	10μF	±20%	16V
C409	0252811	EL	1μF	±20%	50V
C410	1252542	EL	2200μF	±20%	16V
C411	0240108	CD	0.022μF	±30%	16V
C415L, R	0252813	EL	3.3μF	±20%	50V
C416	0275011	MF	0.01μF	±10%	50V
C417	0275033	MF	0.027μF	±10%	50V
		(for ZS only)			
C601L, R	0275014	MF	0.033μF	±10%	50V
C602L, R	0230036	CD	100PF	±5%	50V
C603L, R	0252813	EL	3.3μF	±20%	50V
C604L, R	0252521	EL	10μF	±20%	16V
C605L, R	0240009	CD	560PF	±10%	50V
C606L, R	0240101	CD	1500PF	±30%	25V
C607L, R	0240056	CD	3900PF	±30%	25V
C608L, R	0275031	MF	0.012μF	±10%	50V
C609L, R	0275032	MF	0.018μF	±10%	50V
C610L, R	0240054	CD	2700PF	±20%	16V
C611L, R	0275031	MF	0.012μF	±10%	50V
C612L, R	0275034	MF	0.039μF	±10%	50V
C613L, R	0275016	MF	0.068μF	±10%	50V
C614L, R	0276011	MF	0.1μF	±10%	50V
C615L, R	0252811	EL	1μF	±20%	50V
C616L, R	0252521	EL	10μF	±20%	16V
C617L, R	0252231	EL	100μF	±20%	6.3V
C618	0252525	EL	47μF	±20%	16V
C619	0252325	EL	47μF	±10%	10V
C620L, R	0240008	CD	470PF	±10%	50V
C622	1252532	EL	220μF	±20%	16V
C623	1252535	EL	470μF	±20%	16V
C624L, R	0230028	CC	47PF	±50%	50V
		(for ZS only)			
C625	0275033	MF	0.027μF	±10%	50V
		(for ZS only)			
C701L, R	0240008	CD	470PF	±10%	50V
		(except ZS)			
C701L, R	2400005	CD	270PF	±10%	50V
		(for ZS only)			
C702L, R	0252813	EL	3.3μF	±20%	50V
C703L, R	0252231	EL	100μF	±20%	6.3V
C704L, R	0230036	CD	100PF	±5%	50V
		(except ZS)			
C704L, R	0240005	CD	270PF	±10%	50V
		(for ZS only)			
C705	1252831	EL	100μF	±20%	50V
C706	1252831	EL	100μF	±20%	50V
C707	0252811	EL	1μF	±20%	50V
C708	0252811	EL	1μF	±20%	50V
C709L, R	0275015	MF	0.047μF	±10%	50V
C710L, R	0240108	CD	0.022μF	±30%	16V
		(for ZS only)			
C711L, R	0275011	MF	0.01μF	±10%	50V
		(for ZS only)			
C712L, R	0252825	EL	47μF	±20%	50V
C713L, R	0275011	MF	0.01μF	±10%	50V
		(for ZS only)			
C801	0252625	EL	47μF	±20%	25V
C802	0252625	EL	47μF	±20%	25V
C803	0252821	EL	10μF	±20%	50V
C804	0259931	EL	6800μF	±20%	50V
C805	0259931	EL	6800μF	±20%	50V
⚠ C806	1241901	CD	0.01μF	+80 −20 %	250V
C807	1276511	MF	0.1μF	±10%	100V
		(for ZS only)			
C901	0252231	EL	100μF	±20%	6.3V
C902	0252811	EL	1μF	±20%	50V
C903	0240108	CD	0.022μF	±30%	16V
C904	0252815	EL	47μF	±20%	50V
C905	0252231	EL	100μF	±20%	6.3V
(HA-37)		RESISTORS			
R401L, R	0129579	CF	560Ω	±5%	SRD1/4P
		(except ZS)			
R401L, R	0129613	CF	3.3kΩ	±5%	SRD1/4P
		(for ZS only)			
R402L, R	0129601	CF	1kΩ	±5%	SRD1/4P
		(for ZS only)			
R403L, R	0129601	CF	1kΩ	±5%	SRD1/4P
		(for ZS only)			
R404L, R	0129601	CF	1kΩ	±5%	SRD1/4P
		(for ZS only)			
R405L, R	0129647	CF	47kΩ	±5%	SRD1/4P
R406L, R	0129581	CF	680Ω	±5%	SRD1/4P
R407L, R	0129643	CF	33kΩ	±5%	SRD1/4P
R408L, R	0129675	CF	390kΩ	±5%	SRD1/4P
R409L, R	0129661	CF	100kΩ	±5%	SRD1/4P
R410L, R	0129601	CF	1kΩ	±5%	SRD1/4P
⚠ R411	1110621	FR	100Ω	±5%	RN1/4B
⚠ R412L, R	1110621	FR	100Ω	±5%	RN1/4B
R413	0129645	CF	39kΩ	±5%	SRD1/4P
R414	0129621	CF	6.8kΩ	±5%	SRD1/4P
R415	0129601	CF	1kΩ	±5%	SRD1/4P
R416	0129601	CF	1kΩ	±5%	SRD1/4P
R417	0129601	CF	1kΩ	±5%	SRD1/4P
R418	0129601	CF	1kΩ	±5%	SRD1/4P
R419	0129617	CF	4.7kΩ	±5%	SRD1/4P
R601L, R	0129617	CF	4.7kΩ	±5%	SRD1/4P
R603L, R	0129637	CF	18kΩ	±5%	SRD1/4P
R605L, R	0129661	CF	100kΩ	±5%	SRD1/4P
R606L, R	0129613	CF	3.3kΩ	±5%	SRD1/4P
R607L, R	0129665	CF	150kΩ	±5%	SRD1/4P
R608L, R	0129609	CF	2.2kΩ	±5%	SRD1/4P
R609L, R	0129661	CF	100kΩ	±5%	SRD1/4P
R610L, R	0129617	CF	4.7kΩ	±5%	SRD1/4P
R611L, R	0129619	CF	5.6kΩ	±5%	SRD1/4P
R612L, R	0129621	CF	6.8kΩ	±5%	SRD1/4P
R613L, R	0129631	CF	10kΩ	±5%	SRD1/4P
R614L, R	0129639	CF	22kΩ	±5%	SRD1/4P
R615L, R	0129647	CF	47kΩ	±5%	SRD1/4P
R616L, R	0129617	CF	4.7kΩ	±5%	SRD1/4P
R617L, R	0129619	CF	5.6kΩ	±5%	SRD1/4P
R618L, R	0129621	CF	6.8kΩ	±5%	SRD1/4P
R619L, R	0129631	CF	10kΩ	±5%	SRD1/4P
R620L, R	0129639	CF	22kΩ	±5%	SRD1/4P
R621L, R	0129647	CF	47kΩ	±5%	SRD1/4P
R622L, R	0129647	CF	47KΩ	±5%	SRD1/4P
R628L, R	0129673	CF	330kΩ	±5%	SRD1/4P
R629L, R	0129607	CF	1.8kΩ	±5%	SRD1/4P
R630L, R	0129601	CF	1kΩ	±5%	SRD1/4P
⚠ R631	1110621	FR	100Ω	±5%	RN1/4B
⚠ R632	1110625	FR	220Ω	±5%	RN1/4B
R633	0129577	CF	470Ω	±5%	SRD1/4P
R634L, R	0129665	CF	150kΩ	±5%	SRD1/4P
R701L, R	0129601	CF	1kΩ	±5%	SRD1/4P
R702L, R	0129661	CF	100kΩ	±5%	SRD1/4P
R703L, R	0129581	CF	680Ω	±5%	SRD1/4P
R704L, R	0129661	CF	100kΩ	±5%	SRD1/4P
⚠ R705	1110621	FR	100Ω	±5%	RN1/4B
⚠ R706	1110621	FR	100Ω	±5%	RN1/4B
R707L, R	1119123	ME	0.22Ω	±10%	SRD2P
R708L, R	0129613	CF	3.3KΩ	±5%	SRD1/4P
R709L, R	0129617	CF	4.7kΩ	±5%	SRD1/4P
R710L, R	0129661	CF	100kΩ	±5%	SRD1/4P
R711	0129619	CF	5.6kΩ	±5%	SRD1/4P
R712L, R	0129531	CF	10Ω	±5%	SRD1/4P
R713L, R	0134364	CO	180Ω	±10%	SRD1/2P
R714L, R	0134364	CO	180Ω	±10%	SRD1/2P
R715L, R	0134377	CO	2.2kΩ	±10%	SRD1/2P
R716L, R	0134377	CO	2.2kΩ	±10%	SRD1/2P
R717L, R	0134293	CO	22Ω	±10%	SRD1/2P
R718L, R	0134293	CO	22Ω	±10%	SRD1/2P
R801	1119428	ME	390Ω	±10%	SRD1P
R802	0129601	CF	1kΩ	±5%	SRD1/4P
R803	0129601	CF	1kΩ	±5%	SRD1/4P
R804	1119430	ME	560Ω	±10%	SRD1P
R805	0129637	CF	18kΩ	±5%	SRD1/4P
R806	0134374	CO	1.2kΩ	±10%	SRD1/2P
R807	0129611	CF	2.7kΩ	±5%	SRD1/4P
R808	0129619	CF	5.6kΩ	±5%	SRD1/4P
R809	0129619	CF	5.6kΩ	±5%	SRD1/4P
R810	0129561	CF	100Ω	±5%	SRD1/4P
R901	0129661	CF	100kΩ	±5%	SRD1/4P
R902	0129649	CF	56kΩ	±5%	SRD1/4P
R903	0129635	CF	15kΩ	±5%	SRD1/4P
R904	0134371	CO	680Ω	±10%	SRD1/2P
R905	0134369	CO	470Ω	±10%	SRD1/2P
(HA-37)		ICs & TRANSISTORS			
IC401	2387301	M5218P			
IC402	2387563	TC9151P			
IC701	2387491	STK4191Ⅱ			
IC901	2387581	μPC1237H			
Q601L, R	2328653	2SC1740LNE			
Q602L, R	2328653	2SC1740LNE			
Q701L, R	2327742	2SA836D			
Q801	2317822	2SD880Y			
Q802	2328452	2SB6460			
(HA-37)		DIODES			
D401	2337011	1S2076			
D402	2337011	1S2076			
D403	2337011	1S2076			
D404	2337011	1S2076			

SYMBOL No.	PART No.	DESCRIPTION
D405	2337011	1S2076
D406	2337011	1S2076
D407	2337011	1S2076
D408	2337011	1S2076
D409	2337011	1S2076
D701	2337151	1S2076A
D702L, R	2337011	1S2076
D801	2337762	ERB12-01
D802	2337461	S4VB-20
ZD601	2337549	HZ07C3
ZD801	2337189	HZ-15-3
ZD802	2337189	HZ-15-3
ZD803	2337568	HZ12C-2
LED410	2339892	SEL1213C
LED411	2339892	SEL1213C
LED412	2339892	SEL1213C
LED413	2339892	SEL1213C
(HA-37)		VARIABLE RESISTORS
R602	0151679	200kΩ-(Special Washer) (BALANCE)
R604	0151857	200kΩ-(B) (VOLUME)
R623	0166576	100kΩ-(B) (G/E VOLUME)
R624	0166576	100kΩ-(B) (G/E VOLUME)
R625	0166576	100kΩ-(B) (G/E VOLUME)
R626	0166576	100kΩ-(B) (G/E VOLUME)
R627	0166576	100kΩ-(B) (G/E VOLUME)
RY701	2647711	DH relay
(HA-37)		MISCELLANEOUS
L701L, R	2227361	Audio trap coil (0.67μH)
⚠ S001	2600151	Push switch (Power switch)
S401	2639682	Tact switch (TUNER)
S402	2639682	Tact switch (PHONO)
S403	2639682	Tact switch (CD/AUX)
S404	2639682	Tact switch (TAPE MONITOR)
S601	2600261	Push switch (LOUDNESS)
S701	2600081	Push switch (Speaker SW)
⚠	2618053	Voltage selector switch (for EW only)
	2678347	6P US pin jack
	2678348	4P US pin jack
	2688282	Push terminal
	2677753	Headphone jack
⚠ F001	2727894	Fuse 4A–25V (for US, CS)
⚠ F001	2727192	Fuse T1.25A (except US, CS)
	4573552	3φx16 bind tapping screw (IC)
	4784106	Screw, tapping bind head 3φx10 (fin)
	4567411	Screw bind head 3φx6 (holder)
(HA-37)		for ACCESSORIES
⚠	2727196	Fuse T3.15A–250V (for EW only)
⚠	2667922	Siemens plug (for EW only)

SYMBOL No.	PART No.	DESCRIPTION
1	4028102	Front panel ass'y
2	4460208	Cover ass'y
3	3301931	Knob (35) (except US, CS)
	3301932	Knob (35) (for US, CS)
4	3301153	Slide volume
5	3301141	Push button
6	3299653	Knob (14)
7	3958756	Push button (M)
8	3305091	Power button ass'y
9	3927411	Leg 10φx21.8
10	3928651	Leg 22φx7.5
	4567412	Screw, bind head 3φx8 (front panel)
	4567432	Screw, bind head 3φx8 (rear plate)
	4784106	Screw, tapping bind head 3φx10 (rear US pin, PWB other)
	4567454	Screw, bind head 3φx12 (front panel, PWB)
	4567422	Screw, bind head 4φx8 (power transformer)
	4567443	Screw, bind head 4φx10 (cover)
	4567432	Screw, bind head 3φx8 (voltage selector switch) (for EW only)
	4567413	Screw, bind head 3φx10 (leg)
	4567411	Screw, bind head 3φx6 (leg)
	8741103	Screw, bind head 2φx3 (FZ) (sealed plate, G.E. volume)
⚠ PT001	2248941	Power transformer (for US, CS)
⚠ PT001	2248942	Power transformer (for KS, ZS, ES, VS)
⚠ PT001	2248943	Power transformer (for EW only)
⚠ PT001	2248944	Power transformer (for BS, SA)
⚠ 11	2700121	Power supply cord (for US only)
⚠	2700122	Power supply cord (for CS only)
⚠	2748752	Power supply cord (for KS, ZS, ES, VS)
⚠	2749582	Power supply cord (for BS only)
⚠	2749622	Power supply cord (for SA only)
⚠	2718113	Power supply cord (for EW only)
⚠ 12	0043793	Bushing (3P-4) (for US, EW)
⚠	3913006	Bushing (4N-4) (except US, EW)
13	4462071	Rear plate (for US only)
	4462072	Rear plate (for CS only)
	4462073	Rear plate (except US, CS, EW)
	4462074	Rear plate (for EW only)
⚠ 14	2658414	AC outlet (for US, CS, EW)

CD: Ceramic discal
CC: Cylindrical ceramic
EL: Electrolytic
MF: Mylar, film
PP: Polypro-pylene
ST: Styrol
CF: Carbon film
ME: Metal
MO: Metal, Oxide
CO: Composition
FR: Fuse resister

SYMBOL No.	PART No.	DESCRIPTION			
(HA-57)		CAPACITORS			
⚠ C001	1243901	CD	0.01μF	$^{+100}_{-0}\%$	400V
C401L, R	0230036	CC	100PF	±5%	50V
		(except ZS)			
C401L, R	0240008	CD	470PF	±10%	50V
		(for ZS only)			
C402L, R	0230036	CC	100PF	±5%	50V
		(except ZS)			
C402L, R	0240004	CD	220PF	±10%	50V
		(for ZS only)			
C403L, R	0252231	EL	100μF	±20%	6.3V
C404L, R	0274213	MF	2200PF	±5%	50V
C405L, R	0274236	MF	0.0082μF	±5%	50V
C406L, R	0252811	EL	1μF	±20%	50V
C407	0252521	EL	10μF	±20%	16V
C408	0252521	EL	10μF	±20%	16V
C409	0252811	EL	1μF	±20%	50V
C410	0252811	EL	1μF	±20%	50V
C411	1252542	EL	2200μF	±20%	16V
C412	0240108	CD	0.022μF	±30%	16V
C417L, R	0230036	CC	100PF	±5%	50V
		(for ZS only)			
C419L, R	0230036	CC	100PF	±5%	50V
		(for ZS only)			
C420L, R	0252813	EL	3.3μF	±20%	50V
C421	0275011	MF	0.01μF	±10%	50V
C601L, R	0240002	CD	150PF	±10%	50V
C602L, R	0275014	MF	0.033μF	±10%	50V
C603L, R	0230036	CD	100PF	±5%	50V
C604L, R	0252813	EL	3.3μF	±20%	50V
C605L, R	0252521	EL	10μF	±20%	16V
C606L, R	0240009	CD	560PF	±10%	50V
C607L, R	0240101	CD	1500PF	±30%	25V
C608L, R	0240056	CD	3900PF	±30%	16V
C609L, R	0275031	MF	0.012μF	±10%	50V
C610L, R	0275032	MF	0.018μF	±10%	50V
C611L, R	0240054	CD	2700PF	±20%	16V
C612L, R	0275031	MF	0.012μF	±10%	50V
C613L, R	0275034	MF	0.039μF	±10%	50V
C614L, R	0275016	MF	0.068μF	±10%	50V
C615L, R	0276011	MF	0.1μF	±10%	50V
C616L, R	0252811	EL	1μF	±20%	50V
C617L, R	0252521	EL	10μF	±20%	16V
C618L, R	0252231	EL	100μF	±20%	6.3V
C619	0252525	EL	47μF	±20%	16V
C620	0252325	EL	47μF	±10%	10V
C621L, R	0240008	CD	470PF	±10%	50V
C623	1252535	EL	470μF	±20%	16V
C701L, R	0240008	CD	470PF	±10%	50V
C702L, R	0252811	EL	1μF	±20%	50V
C703L, R	0252231	EL	100μF	±20%	6.3V
C704L, R	0230028	CC	47PF	±5%	50V
		(except ZS)			
C704L, R	0240005	CD	270PF	±10%	50V
		(for ZS only)			
C705L, R	0230008	CC	4.7μF	±10%	50V
C706	1253031	EL	100μF	±20%	100V
C707	1253031	EL	100μF	±20%	100V
C708L, R	0230028	CC	47PF	±5%	50V
C709L, R	0230028	CC	47PF	±5%	50V
C710L, R	0230028	CC	47PF	±5%	50V

SYMBOL No.	PART No.	DESCRIPTION			
C711L, R	0240005	CD	270PF	±10%	50V
C712L, R	1253011	EL	1μF	±20%	100V
C713L, R	1253011	EL	1μF	±20%	100V
C714L, R	0276011	MF	0.1μF	±10%	50V
C715L, R	0276011	MF	0.1μF	±10%	50V
C716L, R	0240108	CD	0.022μF	±30%	16V
		(for ZS only)			
C717L, R	0275011	MF	0.01μF	±10%	50V
		(for ZS only)			
C718L, R	0274011	MF	0.001μF	±10%	50V
		(for ZS only)			
C719L, R	0274011	MF	0.001μF	±10%	50V
		(for ZS only)			
C720L, R	0275011	MF	0.01μF	±10%	50V
		(for ZS only)			
C801	0252625	EL	47μF	±20%	25V
C802	0252625	EL	47μF	±20%	25V
C803	1252735	EL	470μF	±20%	35V
C804	1252741	EL	1000μF	±20%	35V
C805	0252821	EL	10μF	±20%	50V
⚠ C806	1241901	CD	0.01μF	$^{+80}_{-20}\%$	250V
C807	0259986	EL	10000μF	±20%	71V
C808	0259986	EL	10000μF	±20%	71V
C809	1276511	MF	0.1μF	±10%	100V
		(for ZS only)			
⚠ C810	1241901	CD	0.01μF	$^{+80}_{-20}\%$	250V
C811	1276511	MF	0.1μF	±10%	100V
		(for ZS only)			
C901	0252231	EL	100μF	±20%	6.3V
C902	0252811	EL	1μF	±20%	50V
C903	0240108	CD	0.022μF	±30%	16V
C904	0252615	EL	4.7μF	±20%	25V
C905	0252323	EL	33μF	±20%	10V
C907L, R	0252811	EL	1μF	±20%	50V
C908L, R	0252815	EL	4.7μF	±20%	50V
C909L, R	0240101	CD	1500PF	±30%	25V
C910L	0252815	EL	4.7μF	±20%	50V
C911L, R	0252801	EL	0.1μF	±20%	50V
(HA-57)		RESISTORS			
R401L, R	0129565	CF	150Ω	±5%	SRD1/4P
		(except ZS)			
R401L, R	0129613	CF	3.3kΩ	±5%	SRD1/4P
		(for ZS only)			
R402L, R	0129601	CF	1kΩ	±5%	SRD1/4P
R403L, R	0129601	CF	1kΩ	±5%	SRD1/4P
R404L, R	0129601	CF	1kΩ	±5%	SRD1/4P
R405L, R	0129601	CF	1kΩ	±5%	SRD1/4P
R406L, R	0129601	CF	1kΩ	±5%	SRD1/4P
		(for ZS only)			
R407L, R	0129601	CF	1kΩ	±5%	SRD1/4P
R408L, R	0129601	CF	1kΩ	±5%	SRD1/4P
		(for ZS only)			
R409L, R	0129647	CF	47kΩ	±5%	SRD1/4P
R410L, R	0129581	CF	680Ω	±5%	SRD1/4P
⚠ R411	0129643	CF	33kΩ	±5%	SRD1/4P
⚠ R412L, R	0129675	CF	390kΩ	±5%	SRD1/4P
R413L, R	0129661	CF	100kΩ	±5%	SRD1/4P
R414L, R	0129601	CF	1kΩ	±5%	SRD1/4P
⚠ R415	1110621	FR	100Ω	±5%	RN1/4B
⚠ R416	1110621	FR	100Ω	±5%	RN1/4B
R417	0129645	CF	39kΩ	±5%	SRD1/4P
R418	0129621	CF	6.8kΩ	±5%	SRD1/4P

SYMBOL No.	PART No.	DESCRIPTION			
R419	0129645	CF	39kΩ	±5%	SRD1/4P
R420	0129621	CF	6.8kΩ	±5%	SRD1/4P
R421	0129601	CF	1kΩ	±5%	SRD1/4P
R422	0129601	CF	1kΩ	±5%	SRD1/4P
R423	0129601	CF	1kΩ	±5%	SRD1/4P
R424	0129601	CF	1kΩ	±5%	SRD1/4P
R425	0129601	CF	1kΩ	±5%	SRD1/4P
R426	0129601	CF	1kΩ	±5%	SRD1/4P
R427	0129617	CF	4.7kΩ	±5%	SRD1/4P
R428	0129631	CF	10kΩ	±5%	SRD1/4P
R601L, R	0129617	CF	4.7kΩ	±5%	SRD1/4P
R603L, R	0129637	CF	18kΩ	±5%	SRD1/4P
R605L, R	0129661	CF	100kΩ	±5%	SRD1/4P
R606L, R	0129613	CF	3.3kΩ	±5%	SRD1/4P
R607L, R	0129665	CF	150kΩ	±5%	SRD1/4P
R608L, R	0129609	CF	2.2kΩ	±5%	SRD1/4P
R609L, R	0129661	CF	100kΩ	±5%	SRD1/4P
R610L, R	0129617	CF	4.7kΩ	±5%	SRD1/4P
R611L, R	0129619	CF	5.6kΩ	±5%	SRD1/4P
R612L, R	0129621	CF	6.8kΩ	±5%	SRD1/4P
R613L, R	0129631	CF	10kΩ	±5%	SRD1/4P
R614L, R	0129639	CF	22kΩ	±5%	SRD1/4P
R615L, R	0129647	CF	47kΩ	±5%	SRD1/4P
R616L, R	0129617	CF	4.7kΩ	±5%	SRD1/4P
R617L, R	0129619	CF	5.6kΩ	±5%	SRD1/4P
R618L, R	0129621	CF	6.8kΩ	±5%	SRD1/4P
R619L, R	0129631	CF	10kΩ	±5%	SRD1/4P
R620L, R	0129639	CF	22kΩ	±5%	SRD1/4P
R621L, R	0129647	CF	47kΩ	±5%	SRD1/4P
R622L, R	0129647	CF	47KΩ	±5%	SRD1/4P
R628L, R	0129673	CF	330kΩ	±5%	SRD1/4P
R629L, R	0129607	CF	1.8kΩ	±5%	SRD1/4P
R630L, R	0129601	CF	1kΩ	±5%	SRD1/4P
⚠ R631	1110622	FR	120Ω	±5%	RN1/4B
⚠ R632	1110625	FR	220Ω	±5%	RN1/4B
R633	0129577	CF	470Ω	±5%	SRD1/4P
R634L, R	0129683	CF	820kΩ	±5%	SRD1/4P
R635L, R	0129665	CF	150kΩ	±5%	SRD1/4P
R636L, R	0129639	CF	22kΩ	±5%	SRD1/4P
R701L, R	0129601	CF	1kΩ	±5%	SRD1/4P
R702L, R	0129661	CF	100kΩ	±5%	SRD1/4P
R703L, R	C129577	CF	470Ω	±5%	SRD1/4P
R704L, R	0129661	CF	100kΩ	±5%	SRD1/4P
R705L, R	0129577	CF	470Ω	±5%	SRD1/4P
⚠ R706	1110621	FR	100Ω	±5%	RN1/4B
⚠ R707	1110621	FR	100Ω	±5%	RN1/4B
R708L, R	1119123	ME	0.22Ω	±10%	SRD2P
R709L, R	1119123	ME	0.22Ω	±10%	SRD2P
R710L, R	0129619	CF	5.6kΩ	±5%	SRD1/4P
R711L, R	0129615	CF	3.9kΩ	±5%	SRD1/4P
R712L, R	0129663	CF	120kΩ	±5%	SRD1/4P
R713	0129641	CF	47kΩ	±5%	SRD1/4P
R714L, R	0129531	CF	10Ω	±5%	SRD1/4P
R715L, R	1119153	ME	15Ω	±10%	SRD2P
R716L, R	0134364	CO	180Ω	±10%	SRD1/2P
R717L, R	0134364	CO	180Ω	±10%	SRD1/2P
R718L, R	0129631	CF	10kΩ	±5%	SRD1/4P
R719	0129581	CF	680Ω	±5%	SRD1/4P
R720L, R	0129615	CF	3.9kΩ	±5%	SRD1/4P
R721L, R	0129611	CF	2.7kΩ	±5%	SRD1/4P
R801	1119044	ME	18Ω	±10%	SRD1P
R802	0129601	CF	1kΩ	±5%	SRD1/4P
R803	0129601	CF	1kΩ	±5%	SRD1/4P

SYMBOL No.	PART No.	DESCRIPTION			
⚠ R804	1113841	FR	82Ω	±5%	RN1/2B
R805	0129631	CF	10kΩ	±5%	SRD1/4P
R806	0134373	CO	1KΩ	±10%	SRD1/2P
R807	0129613	CF	3.3KΩ	±5%	SRD1/4P
R808	0134376	CO	1.8kΩ	±5%	SRD1/2P
R809	0134377	CO	2.2kΩ	±5%	SRD1/2P
R901	0129569	CF	220Ω	±5%	SRD1/4P
R902	0129661	CF	100kΩ	±5%	SRD1/4P
R904	0129665	CF	150kΩ	±5%	SRD1/4P
R905	0129617	CF	4.7kΩ	±5%	SRD1/4P
R909L, R	0129611	CF	2.7kΩ	±5%	SRD1/4P
R911L, R	0129637	CF	18kΩ	±5%	SRD1/4P
R912L, R	0129661	CF	100kΩ	±5%	SRD1/4P
R913L, R	0129635	CF	15kΩ	±5%	SRD1/4P
R914L, R	0129615	CF	3.9kΩ	±5%	SRD1/4P
R915L, R	0129615	CF	3.9kΩ	±5%	SRD1/4P
R916L, R	0129645	CF	39kΩ	±5%	SRD1/4P
R917L, R	0129575	CF	390Ω	±5%	SRD1/4P
R918L, R	0129569	CF	220Ω	±5%	SRD1/4P
R919L, R	0129569	CF	220Ω	±5%	SRD1/4P

(HA-57) ICs & TRANSISTORS

IC401	2387301	M5218P
IC402	2387564	TC9152P
IC403	2387563	TC9151P
IC701	2389441	STK3102Ⅲ
IC702L, R	2389431	STK0100
IC901	2387581	μPC1237H
IC902L, R	2368991	IR2E02
Q601L, R	2328653	2SC1740LNE
Q602L, R	2328653	2SC1740LNE
Q701L, R	2328872	2SD756 E
Q702	2327893	2SA872 E
Q703L, R	2329183	2SA1015GR
Q801	2317822	2SD880Y
Q802	2328862	2SB716 E

(HA-57) DIODES

D401	2337011	1S2076
D402	2337011	1S2076
D403	2337011	1S2076
D404	2337011	1S2076
D405	2337011	1S2076
D406	2337011	1S2076
D407	2337011	1S2076
D408	2337011	1S2076
D409	2337011	1S2076
D410	2337011	1S2076
D411	2337011	1S2076
D412	2337011	1S2076
D419	2337011	1S2076
D420	2337011	1S2076
D421	2337011	1S2076
D701	2337151	1S2076A
D702L, R	2337011	1S2076
D703L, R	2337641	1SS81
D704L, R	2337011	1S2076
D801	2337762	ERB12-01
D802	2338721	SIWB20
D803	2337341	S5VB20
D908L, R	2337601	1S2473
D909L, R	2337601	1S2473
D910L, R	2337601	1S2473

SYMBOL No.	PART No.	DESCRIPTION
D911L, R	2337921	1K34A
ZD601	2337549	HZ07C3
ZD602	2337552	HZ11A-2
ZD801	2337189	HZ-15-3
ZD802	2337189	HZ-15-3
ZD803	2337568	HZ12C-2
LED413	2339892	SEL1213C
LED414	2339892	SEL1213C
LED415	2339892	SEL1213C
LED416	2339892	SEL1213C
LED417	2339892	SEL1213C
LED418	2339892	SEL1213C
LED901L, R	2337751	GL-5PR6
LED902L, R	2337751	GL-5PR6
LED903L, R	2337811	GL-5NG6
LED904L, R	2337811	GL-5NG6
LED905L, R	2337811	GL-5NG6
LED906L, R	2337811	GL-5NG6
LED907L, R	2337811	GL-5NG6

(HA-57) VARIABLE RESISTORS

R602	0151679	200kΩ-(Special Washer) (BALANCE)
R604	0151857	200kΩ-(B) (VOLUME)
R623	0166576	100kΩ-(B) (G/E VOLUME)
R624	0166576	100kΩ-(B) (G/E VOLUME)
R625	0166576	100kΩ-(B) (G/E VOLUME)
R626	0166576	100kΩ-(B) (G/E VOLUME)
R627	0166576	100kΩ-(B) (G/E VOLUME)
RY701	2647711	DH relay

(HA-57) MISCELLANEOUS

L701L, R	2227311	Audio trap coil (2.5μH)
⚠ S001	2600151	Push switch (Power switch)
S401	2639682	Tact switch (TUNER)
S402	2639682	Tact switch (PHONO)
S403	2639682	Tact switch (CD)
S404	2639682	Tact switch (VIDEO/AUX)
S405	2639682	Tact switch (TAPE1 Mon)
S406	2639682	Tact switch (TAPE2 Mon)
S601	2600261	Push switch (LOUDNESS)
S701	2600082	Push switch (Speaker A SW)
S702	2600081	Push switch (Speaker B SW)
⚠	2618053	Voltage selector switch (for EW only)
	2678345	8P US pin jack
	2688281	Push terminal
	2677753	Headphone jack
⚠ F001	2727896	Fuse 5A U L TSC (for US, CS)
⚠ F001	2727199	Fuse T2.5A–250V (except US, CS)
⚠ F002	2727191	Fuse 1A (T) (except US, CS)
⚠ F003	2727191	Fuse 1A (T) (except US, CS)
	4573552	3φx16 bind tapping screw (IC)
	4784106	Screw, tapping bind head 3φx10 (fin)
	4567411	Screw bind head 3φx6 (holdar)

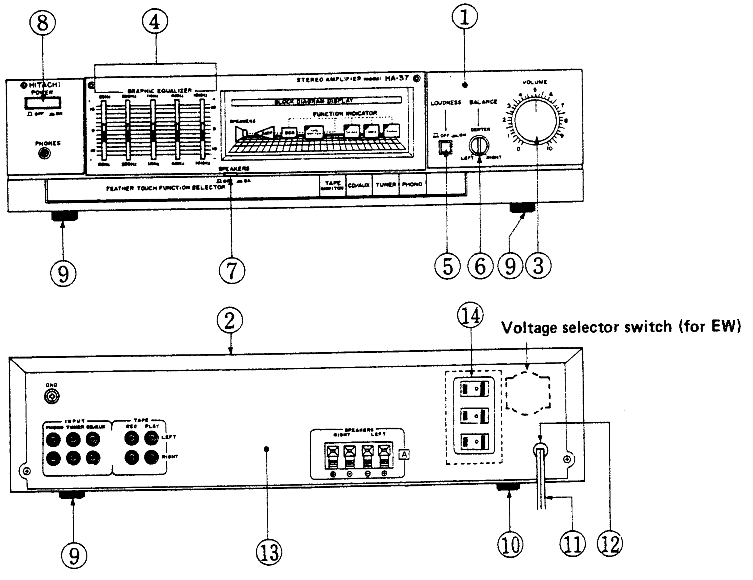
(HA-57) for ACCESSORIES

⚠	2727582	Fuse T4A–250V (for EW only)
⚠	2667922	Siemens plug (for EW only)

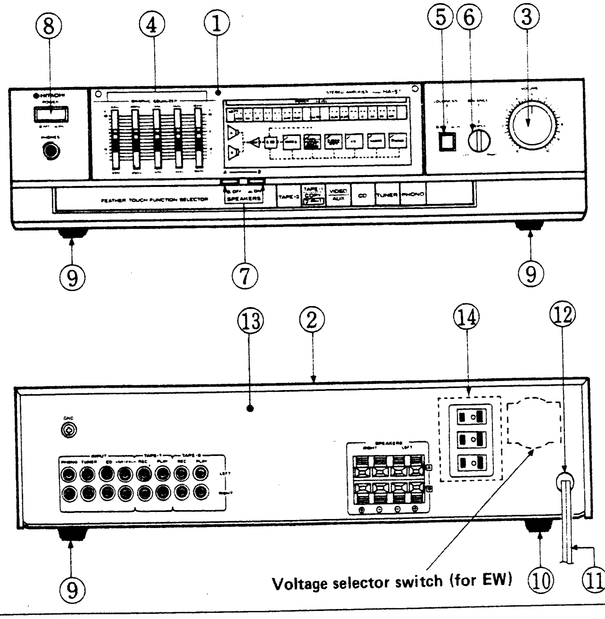
SYMBOL No.	PART No.	DESCRIPTION
1	4028101	Front panel ass'y
2	4460208	Cover ass'y
3	3301931	Knob (35) (except US, CS)
	3301932	Knob (35) (for US, CS)
4	3301153	Slide volume
5	3301141	Push button
6	3299653	Knob (14)
7	3958756	Push button (M)
8	3305091	Power button ass'y
9	3927411	Leg 10φx21.8
10	3928651	Leg 22φx7.5
	4567412	Screw, bind head 3φx8 (front panel)
	4567432	Screw, bind head 3φx8 (rear plate)
	4784106	Screw, tapping bind head 3φx10 (rear US pin, PWB other)
	4567454	Screw, bind head 3φx12 (front panel, PWB)
	4567422	Screw, bind head 4φx8 (power transformer)
	4567443	Screw, bind head 4φx10 (cover)
	4567432	Screw, bind head 3φx8 (voltage selector switch) (for EW only)
	4567413	Screw, bind head 3φx10 (leg)
	4567411	Screw, bind head 3φx6 (leg)
	8741103	Screw, bind head 2φx3 (FZ) (sealed plate, G.E. volume)
⚠ PT001	2248931	Power transformer (for US, CS)
⚠ PT001	2248932	Power transformer (for KS, ZS, ES, VS)
⚠ PT001	2248933	Power transformer (for SA, BS)
⚠ PT001	2248934	Power transformer (for EW only)
⚠ 11	2700121	Power supply cord (for US only)
⚠	2700122	Power supply cord (for CS only)
⚠	2748752	Power supply cord (for KS, ZS, ES, VS)
⚠	2749582	Power supply cord (for BS only)
⚠	2749622	Power supply cord (for SA only)
⚠	2718113	Power supply cord (for EW only)
⚠ 12	0043793	Bushing (3P-4) (for US, EW)
⚠	3913006	Bushing (4N-4) (except US, EW)
13	4462076	Rear plate (for US only)
	4462077	Rear plate (for CS only)
	4462078	Rear plate (except US, CS, EW)
	4462079	Rear plate (for EW only)
⚠ 14	2658414	AC outlet (for US, CS, EW)

FRONT AND REAR PANEL · VORDERE UND HINTER BEDIENUNGSTAFEL · PANNEAUX AVANT ET ARRIER

(HA-37)


⑧
④
①
HITACHI
POWER
PHONES
GRAPHIC EQUALIZER
STEREO AMPLIFIER model HA-37
BLOCK DIAGRAM DISPLAY
FUNCTION INDICATOR
LOUDNESS
BALANCE
CENTER
LEFT
RIGHT
VOLUME
SPEAKERS
FEATHER TOUCH FUNCTION SELECTOR
TAPE
CD/AUX
TUNER
PHONO
⑨
⑦
⑤
⑥
⑨
③
②
⑭
Voltage selector switch (for EW)
GND
INPUT
PHONO
TUNER
CD/AUX
TAPE
REC
PLAY
LEFT
RIGHT
SPEAKERS
⑨
⑬
⑩
⑪
⑫

(HA-57)


⑧
④
①
⑤
⑥
③
HITACHI
FEATHER TOUCH FUNCTION SELECTOR
SPEAKERS
TAPE-1
TAPE-2
VIDEO AUX
CD
TUNER
PHONO
⑨
⑦
⑨
⑬
②
⑭
⑫
GND
INPUT
PHONO
TUNER
CD
TAPE-1
TAPE-2
REC
PLAY
LEFT
RIGHT
SPEAKERS
⑨
Voltage selector switch (for EW)
⑩
⑪